**3GPP TSG- Meeting #**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Local Offloading Policy | | | | | | | | | |
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| ***Source to WG:*** | , Huawei | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | |  |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | 23.502 clause 5.2.5.4.2 and 23.503 clause 6.4 have been extended to respectively specify that the SMF can provide a Local Offloading Policy indication to the PCF and the PCF can in turn provide the Local Offloading Policy in the SM Policy Decision. | | | | | | | | |
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| ***Summary of change:*** | | Added the Local Offloading Policy indication in the SMF inputs to the PCF and the Local Offloading Policy in the SM Policy Decision.  Updated the related procedures. | | | | | | | | |
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| ***Consequences if not approved:*** | | Not fulfilled stage 2 requirements. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.2.2.1, 4.2.2.2, 4.2.2.26(new), 4.2.3.1, 4.2.3.32(new), 4.2.6.1, 5.6.1, 5.6.2.3, 5.6.2.4, 5.6.2.19, 5.8, A.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | This CR introduces a backwards compatible feature into the OpenAPI file of the SMPolicyControl API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\* First Change \*\*\*

4.2.2.1 General

The Npcf\_SMPolicyControl\_Create service operation provides means for the SMF to request the creation of a corresponding SM Policy Association with PCF.

The Session Management procedures of the SMF and related policies are defined in 3GPP TS 23.501 [2], 3GPP TS 23.502 [3] and 3GPP TS 23.503 [6].

The following procedures using the Npcf\_SMPolicyControl\_Create service operation are supported:

- Request the creation of a corresponding SM Policy Association with the PCF.

- Provisioning of PCC rules.

- Provisioning of policy control request triggers.

- Provisioning of charging related information for a PDU session.

- Provisioning of revalidation time.

- Policy provisioning and enforcement of authorized AMBR per PDU session.

- Policy provisioning and enforcement of authorized default QoS.

- Provisioning of PCC rule for Application Detection and Control.

- 3GPP PS Data Off Support.

- IMS Emergency Session Support.

- Request Usage Monitoring Control.

- Access Network Charging Identifier report.

- Request for the successful resource allocation notification.

- Provisioning of IP Index Information.

- Negotiation of the QoS flow for IMS signalling.

- PCF resource cleanup.

- Access traffic steering, switching and splitting support.

- DNN Selection Mode Support.

- Detection of the SM Policy Association enabling Time Sensitive Communications, Time Synchronization and Deterministic Networking.

- Support of Dual Connectivity end to end redundant User Plane paths.

- User Plane Remote Provisioning of UE SNPN Credentials in Onboarding Network.

- Network slice related data rate policy control.

- Request of Presence Reporting Area Change Report.

- Group related data rate policy control.

- Support of Network Slice Usage Control.

- VPLMN Specific Offloading Policy.

- Local Offloading Policy.

- Network Slice Replacement.

- Reporting of URSP rule enforcement infomation.

When the EMDBV feature defined in clause 5.8 is supported by both the PCF and the SMF, the PCF shall use the extMaxDataBurstVol attribute instead of the maxDataBurstVol attribute to signal maximum data burst volume values higher than 4095 Bytes.

When the EMDBV feature is supported by the PCF but not supported by the SMF and the PCF needs to signal maximum data burst volume values higher than 4095 Bytes, the PCF shall use the maxDataBurstVol attribute set to 4095 Bytes.

For values lower than or equal to 4095 Bytes, the PCF shall use the maxDataBurstVol attribute.

NOTE: Maximum data burst volume values are sent by the PCF in responses to the SMF or in an SM Policy Association Update request i.e. after feature negotiation, so the PCF knows whether the SMF supports the EMDBV feature.

\*\*\* Next Change \*\*\*

4.2.2.2 SM Policy Association establishment

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**Figure 4.2.2.2-1: SM Policy Association establishment**

When the NF service consumer receives the Nsmf\_PDUSession\_CreateSMContext Request as defined in clause 5.2.2.2 of 3GPP TS 29.502 [22], if the NF service consumer was requested not to interact with the PCF, the NF service consumer shall not interact with the PCF. Otherwise, the NF service consumer shall send an HTTP POST request to the PCF to create an "Individual SM Policy" resource as described in step 1 of figure 4.2.2.2-1.

NOTE 1: The decision to not interact with the PCF applies for the entire lifetime of the PDU session.

NOTE 2: The indicator to not interact with the PCF is configured in the UDM. It is delivered by the UDM to the NF service consumer within the Charging Characteristics using the Session Management Subscription Data Retrieval service operation as described in 3GPP TS 29.503 [34]. The indicator is operator specific, therefore it can only be used in non-roaming and home routed roaming cases.

The NF service consumer shall include the "SmPolicyContextData" data structure in the content of the HTTP POST request in order to request the creation of a representation of the "Individual SM Policy" resource as described below.

The NF service consumer shall include (if available) in the "SmPolicyContextData" data structure:

- SUPI of the user within the "supi" attribute;

- PDU Session Id within the "pduSessionId" attribute;

- DNN within the "dnn" attribute;

- DNN selection mode within the "dnnSelMode" attribute, if the "DNNSelectionMode" feature is supported;

- URL identifying the recipient of SM policies update notifications within the "notificationUri" attribute;

- PDU Session Type within the "pduSessionType" attribute;

- PEI within the "pei" attribute;

- Internal Group Id(s) within the "interGrpIds" attribute;

- type of access within the "accessType" attribute;

- type of the radio access technology within the "ratType" attribute;

- the combination of additional access type and RAT type within the "addAccessInfo" attribute, if the ATSSS feature is supported;

- the UE Ipv4 address within the "ipv4Address" attribute and/or the UE Ipv6 prefix within the "ipv6AddressPrefix" attribute;

- the UE time zone information within the "ueTimeZone" attribute;

- the UDM subscribed Session-AMBR or, if the "DN-Authorization" feature is supported, the DN-AAA authorized Session-AMBR within the "subsSessAmbr" attribute;

NOTE 3: When both, the UDM subscribed Session-AMBR and the DN-AAA authorized Session-AMBR are available in the NF service consumer, the NF service consumer includes the DN-AAA authorized Session-AMBR.

- if the "VPLMN-QoS-Control" feature is supported, the highest Session-AMBR and the default QoS supported in the VPLMN within the "vplmnQos" attribute, if available;

NOTE 4: In home routed roaming, the H-SMF may provide the QoS constraints received from the VPLMN (defined in 3GPP TS 23.502 [3] clause 4.3.2.2.2) to the PCF.

- the DN-AAA authorization profile index within the "authProfIndex" attribute, if the "DN-Authorization" feature is supported;

- subscribed Default QoS Information within the "subsDefQos" attribute;

- the number of supported packet filters for signalled QoS rules within the "numOfPackFilter" attribute;

- the online charging status within the "online" attribute;

- the offline charging status within the "offline" attribute;

- the charging characteristics within the "chargingCharacteristics" attribute;

- the access network charging identifier within the "accNetChId" attribute;

- the address of the network entity performing charging within the "chargEntityAddr" attribute;

- the 3GPP PS data off status within the "3gppPsDataOffStatus" attribute, if the "3GPP-PS-Data-Off" feature is supported;

- indication of UE support of reflective QoS within the "refQosIndication" attribute;

- user location(s) information within the "userLocationInfo" attribute;

NOTE 5: The SMF encodes both 3GPP and non-3GPP access UE location in the "userLocationInfo" attribute when they are both received from the AMF.

- the S-NSSAI corresponding to the network slice to which the PDU session is allocated within the "sliceInfo" attribute;

- when the "NetSliceRepl" feature is supported and the initial S-NSSAI provided within the "sliceInfo" attribute is replaced by an Alternative S-NSSAI, the Alternative S-NSSAI provided within the "altSliceInfo" attribute;

NOTE 6: For session binding with the BSF, the PCF uses the initial S-NSSAI, regardless of whether it is currently replaced with an Alternative S-NSSAI or not.

- the required QoS flow usage for the default QoS flow within the "qosFlowUsage" attribute;

- the MA PDU session indication within the "maPduInd" attribute, if the "ATSSS" feature is supported;

- the ATSSS capability within the "atsssCapab" attribute, if the "ATSSS" feature is supported;

- the identifier of the serving network (the PLMN Identifier or the SNPN Identifier) within the "servingNetwork" attribute;

NOTE 7: The SNPN Identifier consists of the PLMN Identifier and the NID.

- one or more framed routes within the "ipv4FrameRouteList" attribute for IPv4 and/or one or more framed routes within the "ipv6FrameRouteList" attribute;

NOTE 8: When both, the UDM subscribed framed routes and the DN-AAA authorized framed routes are available in the NF service consumer, the NF service consumer includes the DN-AAA authorized framed routes. If the UDM or DN-AAA updates the framed routes during the lifetime of the PDU Session, the NF service consumer releases the PDU Session as defined in clause 4.2.5.2.

- the serving network function identifier within the "servNfId" attribute;

- when the "PvsSupport" feature is supported, the onboarding indication within the "onboardInd" attribute and the Provisioning Server address(es) within the "pvsInfo" attribute;

- when the "SatBackhaulCategoryChg" feature is supported, the satellite backhaul category within the "satBackhaulCategory" attribute and, when the "EnSatBackhaulCatChg" feature is supported, also including the dynamic satellite backhaul category;

NOTE 9: When the "satBackhaulCategory" attribute is not present, non-satellite backhaul applies.

- when the "AMInfluence" feature is supported, the PCF for the UE callback URI and, if received, SBA binding information within the "pcfUeInfo" attribute;

- when the "URSPEnforcement" feature is supported, the URSP rule enforcement information provided by the UE within the "urspEnfInfo" attribute. In this case, the NF service consumer shall also include the SSC mode within the "sscMode" attribute, the UE requested DNN (if available and different from the selected DNN) within the "ueReqDnn" attribute, and the UE requested PDU session Type (if available and different from the selected PDU session Type) within the "ueReqPduSessionType" attribute;

- trace control and configuration parameters information within the "traceReq" attribute;

- when the "EneNA" feature is supported, the list of NWDAF instance IDs used for the PDU Session within the "nwdafInstanceId" and their associated Analytic ID(s) within "nwdafEvents" consumed by the NF service consumer, included within the "nwdafDatas" attribute;

- for HR-SBO scenario, if the "HR-SBO" feature is supported, the HR-SBO support indication within the "hrsboInd" attribute in the SM policy association; and

- if the "LocalOffloading" feature is supported, the Local Offloading Policy indication within the "locOffloadInd" attribute.

The NF service consumer may include in the "SmPolicyContextData" data structure the IPv4 address domain identity within the "ipDomain" attribute.

NOTE 9: The "ipDomain" attribute is helpful when within a network slice, there are several separate IP address domains, with SMF/UPF(s) that allocate Ipv4 IP addresses out of the same private address range to UE PDU Sessions. The same IP address can thus be allocated to UE PDU sessions served by SMF/UPFs in different IPv4 address domains. If one PCF controls several SMF/UPFs in different IP address domains, the UE IP address is thus not sufficient for the AF session binding procedure, as described in 3GPP TS 29.514 [17]. The SMF assists the PCF in the session binding supplying an "ipDomain" attribute denoting the IPv4 address domain identity of the allocated UE IPv4 address.

When the PCF receives the HTTP POST request from the NF service consumer, the PCF shall make a policy authorization based on the information received from the NF service consumer and, if available, information received from the AMF, the CHF, the AF, the UDR and/or the NWDAF and operator policies pre-configured at the PCF. If the policy authorization is successful, the PCF shall create a new resource, which represents a new "Individual SM Policy" instance, addressed by a URI as defined in clause 5.3.3.2 and containing a PCF created resource identifier. The PCF shall respond to the NF service consumer with an HTTP 201 Created response, including:

- a Location header field containing the URI of the created resource; and

- a response body providing the session management related policies, e.g. provisioning of PCC rules as defined in clause 4.2.6.2, provisioning of policy control request triggers as defined in clause 4.2.6.4.

The NF service consumer shall use the URI received in the Location header in subsequent requests to the PCF to refer to the created "Individual SM Policy" resource.

If the PCF received the list of NWDAF instance IDs used for the PDU Session in "nwdafInstanceId" attribute and their associated Analytic IDs in "nwdafEvents" attribute included within the "nwdafDatas" attribute the PCF may select those NWDAF instances as described in 3GPP TS 29.513 [7].

It the PCF received a "traceReq" attribute in the HTTP POST request from the SMF, it shall perform trace procedures as defined in 3GPP TS 32.422 [24].

If the PCF received the "hrsboInd" attribute indicating the support of HR-SBO, the PCF may provide a VPLMN Specific Offloading Policy as described in clause 4.2.2.25.

If the PCF received the "locOffloadInd" attribute indicating the support of Local Offloading Policy, the PCF may provide a Local Offloading Policy as described in clause 4.2.2.26.

If errors occur when processing the HTTP POST request, the PCF shall apply the error handling procedures specified in clause 5.7.

If the user information received within the "supi" attribute is unknown, the PCF shall reject the request with an HTTP "400 Bad Request" response message including the "cause" attribute of the ProblemDetails data structure set to "USER\_UNKNOWN".

If the PCF is not able, due to incomplete, erroneous or missing information (e.g. QoS, RAT type, subscriber information), to provision a policy decision as response to the request for PCC rules from the NF service consumer, the PCF may reject the request with an HTTP "400 Bad Request" response message including the "cause" attribute of the ProblemDetails data structure set to "ERROR\_INITIAL\_PARAMETERS".

If the NF service consumer receives an HTTP response with the above error codes, the NF service consumer shall reject the PDU session establishment procedure that initiated the HTTP POST Request.

If the PCF, based on local configuration and/or operator policies, denies the creation of the Individual SM Policy resource, the PCF may reject the request with in an HTTP "403 Forbidden" response message including the "cause" attribute of the ProblemDetails data structure set to "POLICY\_CONTEXT\_DENIED". At reception of this error code and based on configured failure actions, the NF service consumer may reject or allow, by applying local policies, the PDU session establishment.

If the "SamePcf" feature as defined in clause 5.8 is supported, when the PCF determines that the same PCF shall be selected for the SM Policy associations to the same UE ID, S-NSSAI and DNN combination in the non-roaming or home-routed scenario and there is no SM Policy association for the UE ID, S-NSSAI and DNN combination, the PCF, after determining whether the BSF supports the "SamePcf" or the "ExtendedSamePcf" feature as described in 3GPP TS 29.521 [39], shall request the BSF to check if there is an existing PCF binding information for the same UE ID, S-NSSAI and DNN combination registered by other PCF(s) as defined in clause 4.2.2.2 of 3GPP TS 29.521 [39]. If the PCF receives the from the BSF "403 Forbidden" status code with the "cause" attribute of the ProblemDetails data structure set to "EXISTING\_BINDING\_INFO\_FOUND" and the FQDN or description of IP endpoints of the Npcf\_SMPolicyControl service of the existing PCF (i.e. that handles SM Policy association(s) to the same UE ID, S-NSSAI and DNN combination) within the "pcfSmFqdn" attribute or the "pcfSmIpEndPoints" attribute of the BindingResp data structure respectively as defined in clause 4.2.2.2 of 3GPP TS 29.521 [39], the PCF shall reply to the SMF with an HTTP "308 Permanent Redirect" error response and the Location header containing a URI as defined in clause 5.3.2.2, with the FQDN or IP endpoint of this PCF's Npcf\_SMPolicyControl service as {apiRoot}. Upon reception of the response, the NF service consumer shall initiate a new HTTP POST request based on the returned URI.

The forwarding of the Origination Time Stamp parameter shall apply as described hereafter, if the NF service consumer supports the detection and handling of late arriving requests as specified in clause 5.2.3.3 of 3GPP TS 29.502 [22] and the procedure is enabled by the operator. If the NF service consumer receives a request to create an SM Context or a PDU session context, which includes the 3gpp-Sbi-Origination-Timestamp header as defined in clause 5.2.3.2, the NF service consumer shall forward this header to the PCF as HTTP custom header. See also clause 4.2.7 for the handling at the PCF, when the PCF receives the 3gpp-Sbi-Origination-Timestamp header.

\*\*\* Next Change \*\*\*

4.2.2.26 Local Offloading Policy

For non-roaming scenarios, if the "LocalOffloading" feature is supported and the PCF receives the "locOffloadInd" attribute set to "true" as part of the Npcf\_SMPolicyControl\_Create request, the PCF may provision the Local Offloading Policy to the local part of DN for Local Offloading Management. The PCF shall include the Local Offloading Policy information within the "locOffloadInfos" attribute in the response.\*\*\* Next Change \*\*\*

4.2.3.1 General

The UpdateNotify service operation provides updated Session Management related policies to the NF service consumer (SMF) or triggers the deletion of the context of SM related policies. The POST method is used for both update and terminate operations.

The following procedures using the Npcf\_SMPolicyControl\_UpdateNotify service operation are supported:

- PCF initiated update of the policies associated with a PDU session.

- PCF initiated deletion of the SM Policy Association of a PDU session.

- Provisioning of PCC rules.

- Provisioning of policy control request triggers.

- Provisioning of revalidation time.

- Policy provisioning and enforcement of the authorized AMBR per PDU session.

- Policy provisioning and enforcement of the authorized default QoS.

- Provisioning of PCC rules for Application Detection and Control.

- 3GPP PS Data Off Support.

- IMS Emergency Session Support.

- Request Access Network Information.

- Request Usage Monitoring Control.

- Request for the result of PCC rule removal.

- Access Network Charging Identifier request.

- Request successful resource allocation notifications.

- IMS Restoration Support.

- P-CSCF Restoration Enhancement Support.

- Access traffic steering, switching and splitting support.

- Policy provisioning and enforcement of AF session with required QoS.

- Forwarding of TSC user plane node management information and port management information received from the TSN AF or TSCTSF.

- Provisioning of TSCAI input information and TSC QoS related data.

- Policy provisioning of QoS Monitoring control.

- Policy decision and condition data error handling.

- Network slice related data rate policy control.

- Request of Presence Reporting Area Change Report.

- PCC Rule Error Report.

- Session Rule Error Report.

- Group related data rate policy control.

- VPLMN Specific Offloading Policy.

- Local Offloading Policy.

- Support of Network Slice Usage Control.

\*\*\* Next Change \*\*\*

4.2.3.32 Local Offloading Policy

For non-roaming scenarios, if the "LocalOffloading" feature is supported and the PCF previously received the "locOffloadInd" attribute set to "true", the PCF may provision/update/remove the Local Offloading Policy for the local part of DN via the Npcf\_SMPolicyControl\_UpdateNotify request by including "locOffloadInfos" attributes.\*\*\* Next Change \*\*\*

4.2.6.1 General

Policy Decisions are provided from the PCF to the NF service consumer (SMF) as part of the following service operations:

- the Npcf\_SMPolicyControl\_Create Service Operation described in clause 4.2.2;

- the SM Policy Association Notification request as part of the Npcf\_SMPolicyControl\_UpdateNotify Service Operation as described in clause 4.2.3.2; and

- the Npcf\_SMPolicyControl\_Update service operation as described in clause 4.2.4

Policy decisions shall be encoded within the SmPolicyDecision data structure defined in clause 5.6.2.4

Policy decisions may include:

- Session Rule(s), as described in clause 4.1.4.3, encoded within the "sessRules" attribute;

- PCC Rule(s), as described in clause 4.1.4.2, encoded within the "pccRules" attribute;

- QoS decision(s), as described in clause 4.1.4.4.3, which can be referenced from PCC rule(s), encoded within the "qosDecs" attribute;

- Charging decision(s), as described in clause 4.1.4.4.4, which can be referenced from PCC rule(s), encoded within the "chgDecs" attribute;

- Traffic control decision(s), as described in clause 4.1.4.4.2, which can be referenced from PCC rule(s), encoded within the "traffContDecs" attribute;

- Usage monitoring control decision(s), as described in clause 4.1.4.4.5, which can be referenced from PCC rule(s) and session rule(s), encoded within the "umDecs" attribute;

- QoS monitoring decision, as described in clause 4.1.4.4.6, which can be referenced from PCC rule(s), encoded within the "qosMonDecs" attribute;

- Condition(s) that can be referenced from PCC rule(s) and session rule(s), encoded within the "conds" attribute;

- QoS characteristics for non-standard 5QIs and non-preconfigured 5QIs provided within the "qosChars" attribute;

- A reflective QoS timer;

- Policy control request triggers and applicable additional information, e.g. Revalidation Time, PRA information;

- Last requested rule data;

- Last requested usage data;

- Default charging method of the PDU session;

- "PDU Session with offline charging only" indication;

- Charging information;

- P-CSCF Restoration Indication;

- IP index information;

- Presence Reporting Area information;

- TSC user plane node management information;

- port management information for the DS-TT port;

- port management information for the NW-TT port;

- The request of the PDU session termination;

- Usage of QoS flow;

- Redundant PDU session indication;

- VPLMN Specific Offloading Policy;

- Local Offloading Policy;

- the network slice usage control information (e.g., the slice PDU session inactivity timer value), if the "NetSliceUsageCtrl" feature is supported; and

NOTE: In this release of the specification, network slice usage control information provisioning/update/removal by the PCF is not supported in roaming scenarios.

- Policy provisioning for eXtended Reality (XR) and Interactive Media Services.

For the Npcf\_SMPolicyControl\_Create Service Operation, the SmPolicyDecision data structure shall contain a full description of all policy decision(s) provided by the PCF for the policy association.

For the Npcf\_SMPolicyControl\_UpdateNotify service operation for the SM Policy Association Notification request and for the Npcf\_SMPolicyControl\_Update service operation, the SmPolicyDecision data structure shall contain a description of the changes to the policy decision(s) with respect to the last provided policy decision(s) for the corresponding policy association. The redundant PDU session indication, the default charging method of the PDU session, the "PDU Session with offline charging only" indication, the charging information, the Reflective QoS Timer and the IP index information shall not be updated by the PCF.

If no other rule is defined for specific data types within the SmPolicyDecision data structure, the encoding of changes of the policy decision(s) in the SmPolicyDecision data structure shall follow the following principles:

1) To modify an attribute with a value of type map (e.g. the "sessRules" attribute, the "pccRules" attribute, the "qosDecs" attribute, the "traffContDecs" attribute, the "umDecs" attribute, the "conds" attribute, etc.), this attribute shall be provided with a value containing a map with entries according to the following principles:

- A new entry of the map shall be added by supplying a new identifier (e.g. rule / decision identifier) as the key and the corresponding structured data type instance (e.g. PCC rule) with the complete content as the value.

- An existing entry of the map shall be modified by supplying the existing identifier as the key and the corresponding structured data type instance as the value, with the same existing identifier (e.g. set the "qosId" to the same existing QoS data decision identifier), which shall describe the modifications following bullets 1 to 6.

- An existing entry of the map shall be deleted by supplying the existing identifier as the key and "NULL" as the value.

- For an unmodified entry of the map, no entry needs to be provided within the map.

2) To modify an attribute with a structured data type instance as the value, the attribute shall be provided with a value containing a structured data type instance with entries according to bullets 1 to 6.

3) To modify an attribute with another type than map or structured data type as the value, the attribute shall be provided with a complete representation of its value, which shall replace the previous value.

4) To create an attribute of any type, the attribute shall be provided with a complete representation of its value.

5) To delete an attribute of any type, the attribute shall be provided with "NULL" as the value.

NOTE 1: Attributes that are allowed to be deleted need to be marked as "nullable" within the OpenAPI file in Annex A.

6) Attributes that are not added, modified or deleted do not need to be provided.

NOTE 2: In the related data structures, no attribute can be marked as mandatory except the attribute containing the identifier (e.g. rule / decision identifier).

The PCF shall not remove a provisioned policy decision data or condition data from the SMF when the associated reference(s) from the PCC rule(s) or session rule(s) are still valid except the usage montoring data referred by the pre-defined PCC rule(s) (see clause 4.2.6.5.3.2 for further information). If the PCF determines that the policy decision or condition data shall be used for future PCC or session rule(s), the PCF may keep a policy decision data or condition data valid when the PCF removes all the PCC rule or session rule(s) referring to that policy decision data or condition data; otherwise the PCF shall remove the provisioned policy decision data or condition data when the PCF removes all the PCC or session rule(s) referring to the policy decision data or condition data.

When the NF service consumer (SMF) accepts the notification of policy updates, and/or when after receiving the response to the request of policies the SM Policy association is retained in the NF service consumer (SMF), if the installation/activation of one or more new PCC rule(s) or the installation of one or more session rule(s) (i.e. rules which were not previously successfully installed) fails, although the failed PCC rule(s) or session rule(s) are removed, the policy decision and/or condition data which are referred by the failed PCC rule(s) or session rule(s) may remain applicable in the SMF until the PCF removes them. If the PCF determines that the policy decision or condition data that remain applicable shall be used for future PCC or session rule(s) (e.g. because the PCF reattempts to install the failed PCC rule) the PCF may keep these policy decision data or condition data valid; otherwise the PCF shall immediately remove these policy data or condition data from the SMF.

NOTE 3: Due to internal policies, the SMF could decide to remove the policy decision and/or condition data not referred by any PCC and/or session rule(s) before the PCF decides to remove them. When the PCF decides to remove the policy decision and/or condition data that were silently removed by the SMF, the SMF accepts the removal indication, as specified in clauses 4.2.3.26 and 4.2.4.26. When the PCF decides to reuse the policy decision and/or condition data that were silently removed by the SMF, the SMF reports PCC and/or session rule error as specified in clauses 4.2.3.16, 4.2.4.15, 4.2.3.20 and 4.2.4.21.

NOTE 4: When the PCF notification of policy updates is rejected as specified in clauses 4.2.3.16 and 4.2.3.20 with a HTTP "400 Bad Request" status code, the whole update is rejected, including the provided policy decision and/or condition data. When the SMF reports PCC and/or session rule(s) error as specified in clauses 4.2.4.15 and 4.2.4.21 for all the provisioned PCC rule and/or session rule(s), the valid policy decision and/or condition data provided in the corresponding update response can remain valid in the SMF until the PCF removes them.

The error handling for the policy decision and/or condition data which are not referred by any PCC rule and/or session rule stored at the SMF is defined in clause 4.2.3.26 and 4.2.4.26.

\*\*\* Next Change \*\*\*

5.6.1 General

This clause specifies the application data model supported by the API.

The Npcf\_SMPolicyControl API allows the NF service consumer to retrieve the session management related policy from the PCF as defined in 3GPP TS 23.503 [6].

Table 5.6.1-1 specifies the data types defined for the Npcf\_SMPolicyControl service based interface protocol.

**Table 5.6.1-1: Npcf\_SMPolicyControl specific Data Types**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **Section defined** | **Description** | **Applicability** |
| 5GSmCause | 5.6.3.2 | Indicates the 5GSM cause code value. | RAN-NAS-Cause |
| AdditionalAccessInfo | 5.6.2.43 | Indicates the combination of additional Access Type and RAT Type for MA PDU session | ATSSS |
| AccNetChargingAddress | 5.6.2.35 | Identifies the address of the network node performing charging and used for charging applications. |  |
| AccNetChId | 5.6.2.23 | Contains the access network charging identifier for the PCC rule(s) or whole PDU session. |  |
| AccuUsageReport | 5.6.2.18 | Contains the accumulated usage report information. | UMC |
| AfSigProtocol | 5.6.3.10 | Indicates the protocol used for signalling between the UE and the AF. | ProvAFsignalFlow |
| AppDetectionInfo | 5.6.2.22 | Contains the detected application's traffic information. | ADC |
| ApplicationDescriptor | 5.6.3.2 | Defines the Application Descriptor for an ATSSS rule. | ATSSS |
| AtsssCapability | 5.6.3.26 | Contains the ATSSS capability supported for the MA PDU Session. | ATSSS |
| AuthorizedDefaultQos | 5.6.2.34 | Authorized Default QoS. |  |
| BatOffsetInfoPcc | 5.6.2.60 | Contains the offset of the BAT and the optionally adjusted periodicity for the corresponding PCC rules(s). | EnTSCAC |
| BridgeManagementContainer | 5.6.2.47 | Contains the UMIC. | TimeSensitiveNetworking |
| CalleeInfo | 5.6.2.55 | Identifies the callee information. | VBCforIMS |
| CallInfo | 5.6.2.54 | Identifies the caller and callee information. | VBCforIMS |
| CapabilityReportRule | 5.6.2.61 | Contains information about whether a capability is not supported or supported again for one or more PCC rules. | QoSMonCapRepo |
| ChargingData | 5.6.2.11 | Contains charging related parameters. |  |
| ChargingInformation | 5.6.2.17 | Contains the addresses, and if available, the instance ID and set ID, of the charging functions. |  |
| ConditionData | 5.6.2.9 | Contains conditions for applicability of a rule. |  |
| CreditManagementStatus | 5.6.3.16 | Indicates the reason of the credit management session failure. |  |
| DownlinkDataNotificationControl | 5.6.2.48 | Contains the downlink data notification control information. | DDNEventPolicyControl |
| DownlinkDataNotificationControlRm | 5.6.2.49 | This data type is defined in the same way as the "DownlinkDataNotificationControl" data type, but with the OpenAPI "nullable: true" property. | DDNEventPolicyControl2 |
| EpsRanNasRelCause | 5.6.3.2 | Indicates the RAN or NAS release cause code information in 3GPP-EPS access type or indicates the TWAN or untrusted WLAN release cause code information in Non-3GPP-EPS access type. | RAN-NAS-Cause |
| ErrorReport | 5.6.2.36 | Contains the PCC rule and/or session rule and/or policy decision and/or condition data reports. |  |
| FailureCause | 5.6.3.14 | Indicates the cause of the failure in a Partial Success Report. |  |
| FailureCode | 5.6.3.9 | Indicates the reason of the PCC rule failure. |  |
| FlowDescription | 5.6.3.2 | Defines a packet filter for an IP flow. |  |
| FlowDirection | 5.6.3.3 | Indicates the direction of the service data flow. |  |
| FlowDirectionRm | 5.6.3.15 | This data type is defined in the same way as the "FlowDirection" data type, but allows null value. |  |
| FlowInformation | 5.6.2.14 | Contains the flow information. |  |
| IpMulticastAddressInfo | 5.6.2.46 | Contains the IP multicast addressing information | WWC |
| L4sSupportInfo | 5.6.2.57 | Indicates whether the ECN marking for L4S is available in 5GS for the indicated PCC rules. | L4S |
| MaPduIndication | 5.6.3.25 | Contains the MA PDU session indication, i.e., MA PDU Request or MA PDU Network-Upgrade Allowed. | ATSSS |
| MeteringMethod | 5.6.3.5 | Indicates the metering method. |  |
| MulticastAccessControl | 5.6.3.20 | Indicates whether the service data flow, corresponding to the service data flow template, is allowed or not allowed. | WWC |
| NetLocAccessSupport | 5.6.3.27 | Indicates the access network support of the report of the requested access network information. | NetLoc |
| NotificationControlIndication | 5.6.3.29 | Indicates the notification of DDD Status is requested and/or notification of DDN Failure is requested. | DDNEventPolicyControl |
| NwdafData | 5.6.2.53 | Indicates the list of NWDAF instance IDs used for the PDU Session and their associated Analytics ID(s) consumed by the NF service consumer. | EneNA |
| PacketFilterContent | 5.6.3.2 | Defines a packet filter for an IP flow. |  |
| PacketFilterInfo | 5.6.2.30 | Contains the information from a single packet filter sent from the NF service consumer to the PCF. |  |
| PartialSuccessReport | 5.6.2.33 | Includes the information reported by the NF service consumer when some of the PCC rules and/or session rules and/or policy decisions and/or condition data are not successfully installed/activated or stored. |  |
| PccRule | 5.6.2.6 | Contains the PCC rule information. |  |
| PduSessionRelCause | 5.6.3.24 | Contains the NF service consumer PDU Session release cause. | PDUSessionRelCause,  ImmediateTermination |
| PolicyControlRequestTrigger | 5.6.3.6 | Contains the policy control request trigger(s). |  |
| PolicyDecisionFailureCode | 5.6.3.28 | Indicates the type of the failed policy decision and/or condition data. | PolicyDecisionErrorHandling |
| PortManagementContainer | 5.6.2.45 | Contains the port management information container for a port. | TimeSensitiveNetworking |
| QosCharacteristics | 5.6.2.16 | Contains QoS characteristics for a non-standardized or non-configured 5QI. |  |
| QosData | 5.6.2.8 | Contains the QoS parameters. |  |
| QosFlowUsage | 5.6.3.13 | Indicates a QoS flow usage information. |  |
| QosMonitoringData | 5.6.2.40 | Contains QoS monitoring related control information. | QosMonitoring |
| QosMonitoringReport | 5.6.2.42 | Contains QoS monitoring reporting information. | QosMonitoring |
| QosNotificationControlInfo | 5.6.2.32 | Contains the QoS Notification Control Information. |  |
| QosMonitoringParamType | 5.6.3.32 | Contains the QoS monitoring parameter to be monitored. | EnQoSMon |
| RanNasRelCause | 5.6.2.28 | Contains the RAN/NAS release cause. | RAN-NAS-Cause |
| RedirectAddressType | 5.6.3.12 | Indicates the redirect address type. | ADC |
| RedirectInformation | 5.6.2.13 | Contains the redirect information. | ADC |
| ReportingFrequency | 5.6.3.22 | Indicates the frequency for the reporting | QosMonitoring |
| ReportingLevel | 5.6.3.4 | Indicates the reporting level. |  |
| RequestedQos | 5.6.2.31 | Contains the QoS information requested by the UE. |  |
| RequestedQosMonitoringParameter | 5.6.3.21 | Indicates the requested QoS monitoring parameters to be measured. | QosMonitoring |
| RequestedRuleData | 5.6.2.24 | Contains rule data requested by the PCF to receive information associated with PCC rules. |  |
| RequestedRuleDataType | 5.6.3.7 | Contains the type of rule data requested by the PCF. |  |
| RequestedUsageData | 5.6.2.25 | Contains usage data requested by the PCF requesting usage reports for the corresponding usage monitoring data instances. | UMC |
| RuleOperation | 5.6.3.11 | Indicates a UE initiated resource operation that causes a request for PCC rules. |  |
| RuleReport | 5.6.2.27 | Reports the status of PCC rule(s). |  |
| RuleStatus | 5.6.3.8 | Indicates the status of PCC or session rule. |  |
| ServingNfIdenty | 5.6.2.38 | Contains the serving Network Function identity. |  |
| SessionRule | 5.6.2.7 | Contains session level policy information. |  |
| SessionRuleFailureCode | 5.6.3.17 | Indicates the reason of the session rule failure. | SessionRuleErrorHandling |
| SessionRuleReport | 5.6.2.37 | Reports the status of session rule. | SessionRuleErrorHandling |
| SgsnAddress | 5.6.2.50 | Contains the serving SGSN address. | 2G3GIWK |
| SliceUsgCtrlInfo | 5.6.2.59 | Represents network slice usage control information. | NetSliceUsageCtrl |
| SmPolicyAssociationReleaseCause | 5.6.3.23 | Represents the cause why the PCF requests the termination of the SM policy association. |  |
| SmPolicyControl | 5.6.2.2 | Contains the parameters to request the SM policies and the SM policies authorized by the PCF. |  |
| SmPolicyContextData | 5.6.2.3 | Contains the parameters to create individual SM policy resource. |  |
| SmPolicyDecision | 5.6.2.4 | Contains the SM policies authorized by the PCF. |  |
| SmPolicyNotification | 5.6.2.5 | Contains the update of the SM policies. |  |
| SmPolicyDeleteData | 5.6.2.15 | Contains the parameters to be sent to the PCF when the individual SM policy is deleted. |  |
| SmPolicyUpdateContextData | 5.6.2.19 | Contains the met policy control request trigger(s) and corresponding new value(s) or the error report of the policy enforcement. |  |
| SteeringFunctionality | 5.6.3.18 | Indicates functionality to support traffic steering, switching and splitting determined by the PCF. | ATSSS |
| SteeringMode | 5.6.2.39 | Contains the steering mode value and parameters determined by the PCF. | ATSSS |
| SteerModeIndicator | 5.6.3.31 | Contains Autonomous load-balance indicator or UE-assistance indicator. | EnATSSS |
| SteerModeValue | 5.6.3.19 | Indicates the steering mode value determined by the PCF. | ATSSS |
| TerminationNotification | 5.6.2.21 | Termination Notification. |  |
| ThresholdValue | 5.6.2.52 | Contains the threshold value(s) for RTT and/or Packet Loss Rate. | EnATSSS |
| TrafficControlData | 5.6.2.10 | Contains parameters determining how flows associated with a PCCRule are treated (blocked, redirected, etc). |  |
| TrafficParaData | 5.6.2.56 | Contains Traffic Parameter(s) related control information. | PowerSaving |
| TrafficParameterMeas | 5.6.3.32 | Indicates the traffic parameters to be measured. | PowerSaving |
| TransportMode | 5.6.3.33 | Indicates the transport mode for MPQUIC steering functionality | EnATSSS\_v2 |
| TsnBridgeInfo | 5.6.2.41 | Contains parameters that describe and identify the TSC user plane node. | TimeSensitiveNetworking |
| TsnPortNumber | 5.6.3.2 | Contains a port number. | TimeSensitiveNetworking |
| UeCampingRep | 5.6.2.26 | Contains the current applicable values corresponding to the policy control request triggers. |  |
| UeInitiatedResourceRequest | 5.6.2.29 | Indicates a UE requests specific QoS handling for selected SDF. |  |
| UePolicyContainer | 5.6.3.2 | Contains a UE policy container | EpsUrsp |
| UeReachabilityStatus | 5.6.3.35 | Contains the UE reachability status. | UEUnreachable |
| UpPathChgEvent | 5.6.2.20 | Contains the UP path change event subscription from the AF. | TSC |
| UrspEnforcementInfo | 5.6.3.2 | Contains the report of URSP rule(s) enforcement information as received from the UE. | URSPEnforcement |
| UsageMonitoringData | 5.6.2.12 | Contains usage monitoring related control information. | UMC |

Table 5.6.1-2 specifies data types re-used by the Npcf\_SMPolicyControl service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Npcf\_SMPolicyControl service based interface.

**Table 5.6.1-2: Npcf\_SMPolicyControl re-used Data Types**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Data type** | | **Reference** | | **Comments** | | **Applicability** | |
| 5GMmCause | | 3GPP TS 29.571 [11] | | Contains the cause value of 5GMM protocol. | | RAN-NAS-Cause | |
| 5Qi | | 3GPP TS 29.571 [11] | | Unsigned integer representing a 5G QoS Identifier (see clause 5.7.2.1 of 3GPP TS 23.501 [2]), within the range 0 to 255. | |  | |
| 5QiPriorityLevel | | 3GPP TS 29.571 [11] | | Unsigned integer indicating the 5QI Priority Level (see clauses 5.7.3.3 and 5.7.4 of 3GPP TS 23.501 [2]), within the range 1 to 127.  Values are ordered in decreasing order of priority, i.e. with 1 as the highest priority and 127 as the lowest priority. | |  | |
| 5QiPriorityLevelRm | | 3GPP TS 29.571 [11] | | This data type is defined in the same way as the "5QiPriorityLevel" data type, but with the OpenAPI "nullable: true" property. | |  | |
| AccessType | | 3GPP TS 29.571 [11] | | The identification of the type of access network. | |  | |
| AccessTypeRm | | 3GPP TS 29.571 [11] | | This data type is defined in the same way as the "AccessType" data type, but with the OpenAPI "nullable: true" property. | | ATSSS | |
| Ambr | | 3GPP TS 29.571 [11] | | Session-AMBR. | |  | |
| AnGwAddress | | 3GPP TS 29.514 [17] | | Carries the control plane address of the access network gateway. | |  | |
| ApplicationChargingId | | 3GPP TS 29.571 [11] | | Application provided charging identifier allowing correlation of charging information. | | AF\_Charging\_Identifier | |
| ApplicationId | | 3GPP TS 29.571 [11] | | Application Identifier | | UPEAS | |
| Arp | | 3GPP TS 29.571 [11] | | ARP. | |  | |
| AverWindow | | 3GPP TS 29.571 [11] | | Averaging Window. | |  | |
| AverWindowRm | | 3GPP TS 29.571 [11] | | This data type is defined in the same way as the "AverWindow" data type, but with the OpenAPI "nullable: true" property. | |  | |
| BitRate | | 3GPP TS 29.571 [11] | | String representing a bit rate that shall be formatted as follows:  pattern: "^\d+(\.\d+)? (bps|Kbps|Mbps|Gbps|Tbps)$"  Examples:  "125 Mbps", "0.125 Gbps", "125000 Kbps". | |  | |
| BitRateRm | | 3GPP TS 29.571 [11] | | This data type is defined in the same way as the "BitRate" data type, but with the OpenAPI "nullable: true" property. | |  | |
| Bytes | | 3GPP TS 29.571 [11] | | String with format "byte". | | TimeSensitiveNetworking | |
| ChargingId | | 3GPP TS 29.571 [11] | | Charging identifier allowing correlation of charging information. | |  | |
| ContentVersion | | 3GPP TS 29.514 [17] | | Indicates the content version of a PCC rule. It uniquely identifies a version of the PCC rule as defined in clause 4.2.6.2.14. | | RuleVersioning | |
| DateTime | | 3GPP TS 29.571 [11] | | String with format "date-time" as defined in OpenAPI Specification [10]. | |  | |
| DateTimeRm | | 3GPP TS 29.571 [11] | | This data type is defined in the same way as the "DateTime" data type, but with the OpenAPI "nullable: true" property. | |  | |
| DddTrafficDescriptor | | 3GPP TS 29.571 [11] | | Traffic Descriptor | | DDNEventPolicyControl | |
| DlDataDeliveryStatus | | 3GPP TS 29.571 [11] | | Downlink data delivery status. | | DDNEventPolicyControl | |
| DnaiChangeType | | 3GPP TS 29.571 [11] | | Describes the types of DNAI change. | |  | |
| Dnn | | 3GPP TS 29.571 [11] | | The DNN the user is connected to. | |  | |
| DnnSelectionMode | | 3GPP TS 29.502 [22] | | DNN selection mode. | | DNNSelectionMode | |
| DurationSec | | 3GPP TS 29.571 [11] | | Identifies a period of time in units of seconds. | |  | |
| DurationSecRm | | 3GPP TS 29.571 [11] | | This data type is defined in the same way as the "DurationSec" data type, but with the OpenAPI "nullable: true" property. | |  | |
| DurationMilliSec | | 3GPP TS 29.514 [17] | | Indicates the time interval in units of milliseconds. | | PowerSaving | |
| DurationMilliSecRm | | 3GPP TS 29.514 [17] | | This data type is defined in the same way as the "DurationMilliSec" data type, but with the OpenAPI "nullable: true" property. | | PowerSaving | |
| EasIpReplacementInfo | | 3GPP TS 29.571 [11] | | Contains EAS IP replacement information for a Source and a Target EAS. | | EASIPreplacement | |
| EthFlowDescription | | 3GPP TS 29.514 [17] | | Defines a packet filter for an Ethernet flow. (NOTE 2) | |  | |
| ExtMaxDataBurstVol | | 3GPP TS 29.571 [11] | | Maximum Data Burst Volume. | | EMDBV | |
| ExtMaxDataBurstVolRm | | 3GPP TS 29.571 [11] | | This data type is defined in the same way as the "ExtMaxDataBurstVol" data type, but with the OpenAPI "nullable: true" property. | | EMDBV | |
| Metadata | | 3GPP TS 29.571 [11] | | This datatype contains opaque information for the service functions in the N6-LAN that is provided by AF and transparently sent to UPF. | | SFC | |
| FinalUnitAction | | 3GPP TS 32.291 [19] | | Indicates the action to be taken when the user's account cannot cover the service cost. | |  | |
| FlowStatus | | 3GPP TS 29.514 [17] | | Describes whether the IP flow(s) are enabled or disabled. The value "REMOVED" is not applicable to Npcf\_SMPolicyControl service. | |  | |
| FqdnPatternMatchingRule | | 3GPP TS 29.571 [11] | | Identifies the FQDN pattern matching rule. | | HR-SBO | |
| Gpsi | | 3GPP TS 29.571 [11] | | Identifies a GPSI. | |  | |
| GroupId | | 3GPP TS 29.571 [11] | | Identifies a group of internal globally unique ID. | |  | |
| Guami | | 3GPP TS 29.571 [11] | | Globally Unique AMF Identifier. | |  | |
| InvalidParam | | 3GPP TS 29.571 [11] | | Invalid Parameters for the reported failed policy decisions | | ExtPolicyDecisionErrorHandling | |
| IpIndex | | 3GPP TS 29.519 [15] | | Information that identifies which IP pool or external server is used to allocate the IP address. | |  | |
| IpAddr | | 3GPP TS 29.571 [11] | | Identifes an IP address. | | HR-SBO | |
| Ipv4Addr | | 3GPP TS 29.571 [11] | | Identifies an Ipv4 address. | |  | |
| Ipv4AddrMask | | 3GPP TS 29.571 [11] | | String identifying an IPv4 address mask. | |  | |
| Ipv6Addr | | 3GPP TS 29.571 [11] | | Identifies an IPv6 address. | |  | |
| Ipv6Prefix | | 3GPP TS 29.571 [11] | | The Ipv6 prefix allocated for the user. | |  | |
| L4sNotifType | | 3GPP TS 29.514 [17] | | Indicates whether the ECN marking for L4S support for the indicated SDFs is "NOT\_AVAILABLE" or "AVAILABLE" again. | | L4S | |
| MacAddr48 | | 3GPP TS 29.571 [11] | | MAC Address. | |  | |
| MaxDataBurstVol | | 3GPP TS 29.571 [11] | | Maximum Data Burst Volume. | |  | |
| MaxDataBurstVolRm | | 3GPP TS 29.571 [11] | | This data type is defined in the same way as the "MaxDataBurstVol" data type, but with the OpenAPI "nullable: true" property. | |  | |
| NfInstanceId | | 3GPP TS 29.571 [11] | | The NF instance identifier. | |  | |
| NfSetId | | 3GPP TS 29.571 [11] | | The NF set identifier. | |  | |
| NgApCause | | 3GPP TS 29.571 [11] | | Contains the cause value of NgAP protocol. | | RAN-NAS-Cause | |
| NotifCap | | 3GPP TS 29.514 [17] | | Contains the notification capability. | | QoSMonCapRepo | |
| NullValue | | 3GPP TS 29.571 [11] | | JSON's null value, used as an explicit value of an enumeration. | |  | |
| NwdafEvent | | 3GPP TS 29.520 [51] | | Analytics ID consumed by the NF service consumer. | | EneNA | |
| PacketDelBudget | | 3GPP TS 29.571 [11] | | Packet Delay Budget. | |  | |
| PacketErrRate | | 3GPP TS 29.571 [11] | | Packet Error Rate. | |  | |
| PacketLossRateRm | | 3GPP TS 29.571 [11] | | This data type is defined in the same way as the "PacketLossRate" data type, but with the OpenAPI "nullable: true" property. | |  | |
| PcfUeCallbackInfo | | 3GPP TS 29.571 [11] | | Contains the PCF for the UE callback URI and SBA binding information, if available | | AMInfluence | |
| PduSessionId | | 3GPP TS 29.571 [11] | | The identification of the PDU session. | |  | |
| PduSessionType | | 3GPP TS 29.571 [11] | | Indicate the type of a PDU session. | |  | |
| PduSetQosParaRm | | 3GPP TS 29.571 [11] | | Represents the PDU Set level QoS parameters to be modified. | | PDUSetHandling | |
| Pei | | 3GPP TS 29.571 [11] | | The Identification of a Permanent Equipment. | |  | |
| PlmnIdNid | | 3GPP TS 29.571 [11] | | The identification of the Network: The PLMN Identifier (the mobile country code and the mobile network code) or the SNPN Identifier (the PLMN Identifier and the NID). | |  | |
| PresenceInfo | | 3GPP TS 29.571 [11] | | Contains the information which describes a Presence Reporting Area. | | PRA | |
| PresenceInfoRm | | 3GPP TS 29.571 [11] | | This data type is defined in the same way as the "PresenceInfo" data type, but with the OpenAPI "nullable: true" property. | | PRA | |
| ProblemDetails | | 3GPP TS 29.571 [11] | | Contains a detailed information about an error. | |  | |
| ProtocolDescription | | 3GPP TS 29.571 [11] | | Represents Protocol description of the media flow | | PDUSetHandling, PowerSaving | |
| QosNotifType | | 3GPP TS 29.514 [17] | | Indicates whether the GBR targets for the indicated SDFs are "NOT\_GUARANTEED" or "GUARANTEED" again. | |  | |
| QosResourceType | | 3GPP TS 29.571 [11] | | Indicates whether the resource type is GBR, delay critical GBR, or non-GBR. | |  | |
| RatingGroup | | 3GPP TS 29.571 [11] | | Identifier of a rating group. | |  | |
| RatType | | 3GPP TS 29.571 [11] | | The identification of the RAT type. | |  | |
| RedirectResponse | | 3GPP TS 29.571 [11] | | Contains redirection related information. | | ES3XX | |
| RouteToLocation | | 3GPP TS 29.571 [11] | | A traffic routes to applications location. | | TSC | |
| SatelliteBackhaulCategory | | 3GPP TS 29.571 [11] | | Indicates the satellite backhaul category or non-satellite backhaul. | | SatBackhaulCategoryChg | |
| ServerAddressingInfo | | 3GPP TS 29.571 [11] | | Contains the Provisioning Server information that provisions the UE with credentials and other data to enable SNPN access. | | PvsSupport | |
| ServiceId | | 3GPP TS 29.571 [11] | | Identifier of a service. | |  | |
| Snssai | | 3GPP TS 29.571 [11] | | Identifies the S-NSSAI. | |  | |
| SscMode | | 3GPP TS 29.571 [11] | | Represents the service and session continuity mode. | | URSPEnforcement | |
| SubscribedDefaultQos | | 3GPP TS 29.571 [11] | | Subscribed Default QoS. | |  | |
| Supi | | 3GPP TS 29.571 [11] | | The identification of the user (i.e. IMSI, NAI). | |  | |
| SupportedFeatures | | 3GPP TS 29.571 [11] | | Used to negotiate the applicability of the optional features defined in table 5.8-1. | |  | |
| TraceData | | 3GPP TS 29.571 [11] | |  | |  | |
| TimeZone | | 3GPP TS 29.571 [11] | | Contains the user time zone information. | |  | |
| TscaiInputContainer | | 3GPP TS 29.514 [17] | | TSCAI Input information. | | TimeSensitiveNetworking | |
| TrafficCorrelationInfo | | 3GPP TS 29.519 [15] | | Contains the information for traffic correlation. | | CommonEASDNAI | |
| UePolicyTransferFailureCause | | 3GPP TS 29.525 [57] | | UE Policy Transfer Failure Cause. | | EpsUrsp | |
| Uinteger | | 3GPP TS 29.571 [11] | | Unsigned Integer. | |  | |
| UintegerRm | | 3GPP TS 29.571 [11] | | This data type is defined in the same way as the "Uinteger" data type, but with the OpenAPI "nullable: true" property. | | EnATSSS,  AF\_latency,  EnQoSMon | |
| Uint16 | | 3GPP TS 29.571 [11] | | Unsigned 16-bit integers. | | MTU\_Size | |
| Uint32 | | 3GPP TS 29.571 [11] | | Unsigned 32-bit integers. | | MTU\_Size | |
| Uint64 | | 3GPP TS 29.571 [11] | | Unsigned 64-bit integers. | | TimeSensitiveNetworking | |
| UplinkDownlinkSupport | | 3GPP TS 29.514 [17] | | Represents whether a capability is supported for the UL, the DL or both UL and DL service data flows | | L4S | |
| Uri | | 3GPP TS 29.571 [11] | | URI. | |  | |
| UserLocation | | 3GPP TS 29.571 [11] | | Contains the user location(s). | |  | |
| Volume | | 3GPP TS 29.122 [32] | | Unsigned integer identifying a volume in units of bytes. | |  | |
| VolumeRm | | 3GPP TS 29.122 [32] | | This data type is defined in the same way as the "Volume" data type, but with the OpenAPI "nullable: true" property. | |  | |
| VplmnDlAmbr | | 3GPP TS 29.571 [11] | | VPLMN Specific DL AMBR. | | HR-SBO | |
| VplmnOffloadingInfo | | 3GPP TS 29.571 [11] | | VPLMN Specific Offloading Information. | | HR-SBO | |
| LocalOffloadingInfo | | 3GPP TS 29.571 [11] | | Local Offloading Information. | | LocalOffloading | |
| VplmnQos | | 3GPP TS 29.502 [22] | | QoS constraints in the VPLMN. | | VPLMN-QoS-Control | |
| NOTE 1: Void  NOTE 2: In order to support a set of MAC addresses with a specific range in the traffic filter, feature MacAddressRange as specified in clause 5.8 shall be supported. | | | | | | | |

\*\*\* Next Change \*\*\*

5.6.2.3 Type SmPolicyContextData

**Table 5.6.2.3-1: Definition of type SmPolicyContextData**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| accNetChId | AccNetChId | O | 0..1 | Indicates the access network charging identifier for the whole PDU session. For EPS interworking scenarios, it indicates the access network charging identifier for the default QoS flow / default EPS bearer or the whole PDU session. |  |
| chargEntityAddr | AccNetChargingAddress | O | 0..1 | Address of the network entity performing charging. |  |
| gpsi | Gpsi | O | 0..1 | Gpsi shall contain either an External Id or an MSISDN. |  |
| supi | Supi | M | 1 | Subscription Permanent Identifier.  (NOTE 2) |  |
| invalidSupi | boolean | C | 0..1 | When this attribute is included and set to true, it indicates that the "supi" attribute contains an invalid value. This attribute shall be present if the SUPI is not available in the NF service consumer, or the SUPI is unauthenticated.  When present it shall be set as follows:  - true: invalid SUPI.  - false (default): valid SUPI. |  |
| pduSessionId | PduSessionId | M | 1 | PDU session Id. |  |
| dnn | Dnn | M | 1 | The DNN of the PDU session, a full DNN with both the Network Identifier and Operator Identifier, or a DNN with the Network Identifier only.  (NOTE 4) |  |
| dnnSelMode | DnnSelectionMode | O | 0..1 | Indicates whether the requested DNN corresponds to an explicitly subscribed DNN. | DNNSelectionMode |
| interGrpIds | array(GroupId) | O | 1..N | The internal Group Id(s). |  |
| notificationUri | Uri | M | 1 | Identifies the recipient of SM policies update notifications sent by the PCF. |  |
| pduSessionType | PduSessionType | M | 1 | Indicates the type of a PDU session. |  |
| accessType | AccessType | O | 0..1 | The Access Type where the served UE is camping. |  |
| ratType | RatType | O | 0..1 | The RAT Type where the served UE is camping. |  |
| addAccessInfo | AdditionalAccessInfo | O | 0..1 | Indicates the combination of additional Access Type and RAT Type for MA PDU session. | ATSSS |
| servingNetwork | PlmnIdNid | O | 0..1 | The serving network (a PLMN or an SNPN) where the served UE is camping. For the SNPN the NID together with the PLMN ID identifies the SNPN. |  |
| userLocationInfo | UserLocation | O | 0..1 | The location where the served UE is camping. (NOTE 3) |  |
| ueTimeZone | TimeZone | O | 0..1 | The time zone where the served UE is camping. |  |
| pei | Pei | C | 0..1 | The Permanent Equipment Identifier of the served UE.  Refer to Clause 4.2.2.9. |  |
| ipv4Address | Ipv4Addr | O | 0..1 | The IPv4 Address of the served UE. |  |
| ipv6AddressPrefix | Ipv6Prefix | O | 0..1 | The Ipv6 Address Prefix of the served UE. |  |
| ipDomain | string | O | 0..1 | IPv4 address domain identifier.  (NOTE 1) |  |
| subsSessAmbr | Ambr | O | 0..1 | UDM subscribed or DN-AAA authorized Session-AMBR. |  |
| authProfIndex | string | O | 0..1 | DN-AAA authorization profile index. | DN-Authorization |
| subsDefQos | SubscribedDefaultQos | O | 0..1 | Subscribed Default QoS Information. |  |
| vplmnQos | VplmnQos | O | 0..1 | QoS constraints in a VPLMN. | VPLMN-QoS-Control |
| numOfPackFilter | integer | O | 0..1 | Contains the number of supported packet filter for signalled QoS rules. |  |
| online | boolean | O | 0..1 | If it is included and set to true, the online charging is applied to the PDU session. |  |
| offline | boolean | O | 0..1 | If it is included and set to true, the offline charging is applied to the PDU session. |  |
| chargingCharacteristics | string | O | 0..1 | Contains the Charging Characteristics applied to the PDU session. Functional requirements for the Charging Characteristics are defined in 3GPP TS 32.255 [35] Annex A.  The charging characteristics are encoded as specified in 3GPP TS 29.503 [34]. |  |
| 3gppPsDataOffStatus | boolean | O | 0..1 | If it is included and set to true, the 3GPP PS Data Off is activated by the UE. | 3GPP-PS-Data-Off |
| refQosIndication | boolean | O | 0..1 | If it is included and set to true, the reflective QoS is supported by the UE. |  |
| sliceInfo | Snssai | M | 1 | Identifies the S-NSSAI. |  |
| altSliceInfo | Snssai | O | 0..1 | Contains the Alternative S-NSSAI. | NetSliceRepl |
| qosFlowUsage | QosFlowUsage | O | 0..1 | Indicates the required usage for default QoS flow. |  |
| servNfId | ServingNfIdentity | O | 0..1 | Contains the serving network function identity. |  |
| suppFeat | SupportedFeatures | C | 0..1 | Indicates the list of Supported features used as described in clause 5.8.  This parameter shall be supplied by the NF service consumer in the POST request that requested the creation of an individual SM policy resource. |  |
| traceReq | TraceData | O | 0..1 | Trace control and configuration parameters information defined in 3GPP TS 32.422 [24]. |  |
| smfId | NfInstanceId | O | 0..1 | SMF instance identifier. |  |
| recoveryTime | DateTime | O | 0..1 | It includes the recovery time of the NF service consumer. |  |
| maPduInd | MaPduIndication | O | 0..1 | Contains the MA PDU session indication, i.e., MA PDU Request or MA PDU Network-Upgrade Allowed. | ATSSS |
| atsssCapab | AtsssCapability | O | 0..1 | Contains the ATSSS capability supported for the MA PDU Session. | ATSSS |
| ipv4FrameRouteList | array(Ipv4AddrMask) | O | 1..N | List of Framed Route information of IPv4. |  |
| ipv6FrameRouteList | array(Ipv6Prefix) | O | 1..N | List of Framed Route information of IPv6. |  |
| satBackhaulCategory | SatelliteBackhaulCategory | O | 0..1 | Indicates satellite backhaul category or non-satellite backhaul used for the PDU session.  When this attribute is not present, non-satellite backhaul applies.  If the "EnSatBackhaulCatChg" feature is supported, the different dynamic satellite backhaul categories may also be provided. | SatBackhaulCategoryChg |
| pcfUeInfo | PcfUeCallbackInfo | O | 0..1 | PCF for the UE callback URI and SBA binding information. | AMInfluence |
| pvsInfo | array(ServerAddressingInfo) | O | 1..N | Provisioning Server(s) information that provision the UE with credentials and other data to enable SNPN access. | PvsSupport |
| onboardInd | boolean | O | 0..1 | If it is included and set to true, it indicates that the PDU session is used for UE Onboarding. | PvsSupport |
| nwdafDatas | array(NwdafData) | O | 1..N | List of NWDAF Instance IDs and their associated Analytics IDs consumed by the NF service consumer. | EneNA |
| urspEnfInfo | UrspEnforcementInfo | O | 0..1 | Contains the reporting of URSP rule enforcement information from the UE. | URSPEnforcement |
| sscMode | SscMode | C | 0..1 | SSC Mode of the PDU session.  It shall be present when the "urspEnfInfo" attribute is present. | URSPEnforcement |
| ueReqDnn | Dnn | O | 0..1 | UE requested DNN.  It shall be present, if available and different from the selected DNN, when the "urspEnfInfo" attribute is present. | URSPEnforcement |
| ueReqPduSessionType | PduSessionType | O | 0..1 | UE requested PDU session Type.  It shall be present, if available and different from the selected PDU session Type, when the "urspEnfInfo" attribute is present. | URSPEnforcement |
| hrsboInd | boolean | O | 0..1 | HR-SBO support indication. If present and set to "true", it indicates that the HR-SBO is supported. Default value is "false" if omitted. | HR-SBO |
| locOffloadInd | boolean | O | 0..1 | Local offloading support indication. Possible values:  - "true": local offloading management, i.e. offloading via an I-SMF, is allowed.  - "false": local offloading management, i.e. offloading via an I-SMF, is not allowed.  - If omitted, the default value is "false". | LocalOffloading |
| uePolFailReport | UePolicyTransferFailureCause | O | 0..1 | Indicates a failure delivery reason for UE policy container. Only applicable to the 5GS and EPC interworking scenario as defined in Annex B.  (NOTE 5) | EpsUrsp |
| NOTE 1: The value provided in this attribute is implementation specific. The only constraint is that the NF service consumer shall supply a different identifier for each overlapping address domain (e.g. the SMF NF instance identifier).  NOTE 2: For an emergency session, when the SUPI is not available in the NF service consumer, or if available, the SUPI is unauthenticated, the value provided in the "supi" attribute is implementation specific.  NOTE 3: The SMF may encode both 3GPP and non-3GPP access UE location in the "userLocationInfo" attribute.  NOTE 4: The PCF uses the DNN as received from the NF service consumer without applying any transformation (e.g. in subsequent requests to the UDR). To successfully perform DNN matching, in a specific deployment a DNN shall always be encoded either with the full DNN (e.g., because there are multiple Operator Identifiers for a Network Identifier) or the DNN Network Identifier only. The NF service consumer may include the DNN Operator Identifier based on local configuration.  NOTE 5: When the "EpsUrsp" feature is supported, the "uePolCont" attribute within the SmPolicyDecision and "uePolFailReport" attribute are mutually exclusive. | | | | | |

Editor's Note: It is FFS to further define Local Offloading Policy indication granularity.

\*\*\* Next Change \*\*\*

5.6.2.4 Type SmPolicyDecision

**Table 5.6.2.4-1: Definition of type SmPolicyDecision**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| sessRules | map(SessionRule) | O | 1..N | A map of Sessionrules with the content being the SessionRule as described in clause 5.6.2.7. The key used in this map for each entry is the sessRuleId attribute of the corresponding SessionRule. (NOTE 2) |  |
| pccRules | map(PccRule) | O | 1..N | A map of PCC rules with the content being the PCCRule as described in clause 5.6.2.6. The key used in this map for each entry is the pccRuleId attribute of the corresponding PccRule. |  |
| qosDecs | map(QosData) | O | 1..N | Map of QoS data policy decisions. The key used in this map for each entry is the qosId attribute of the corresponding QosData. (NOTE 2) |  |
| chgDecs | map(ChargingData) | O | 1..N | Map of Charging data policy decisions. The key used in this map for each entry is the chgId attribute of the corresponding ChargingData. |  |
| chargingInfo | ChargingInformation | O | 0..1 | Contains the CHF addresses, and if available, the associated CHF instance ID(s) and CHF set ID(s) of the PDU session. (NOTE 3) |  |
| traffContDecs | map(TrafficControlData) | O | 1..N | Map of Traffic Control data policy decisions. The key used in this map for each entry is the tcId attribute of the corresponding TrafficControlData. (NOTE 2) |  |
| umDecs | map(UsageMonitoringData) | O | 1..N | Map of Usage Monitoring data policy decisions. The key used in this map for each entry is the umId attribute of the corresponding UsageMonitoringData. | UMC |
| qosChars | map(QosCharacteristics) | O | 1..N | Map of QoS characteristics for non-standard 5QIs and non-preconfigured 5QIs. This map uses the 5QI values as keys. (NOTE 2) |  |
| qosMonDecs | map(QosMonitoringData) | O | 1..N | Map of QoS Monitoring data policy decision. The key used in this map for each entry is the qmId attribute of the corresponding QosMonitoringData. | QosMonitoring |
| reflectiveQoSTimer | DurationSec | O | 0..1 | Defines the lifetime of a UE derived QoS rule belonging to the PDU Session for reflective QoS. (NOTE 2) |  |
| offline | boolean | O | 0..1 | Indicates the offline charging is applicable to the PDU session.  - Set to "true": the offline charging is applicable to the PDU session.  - Set to "false": the offline charging is not applicable to the PDU session.  (NOTE 3) (NOTE 4) (NOTE 6) |  |
| online | boolean | O | 0..1 | Indicates the online charging is applicable to the PDU session.  - Set to "true": the online charging is applicable to the PDU session.  - Set to "false": the online charging is not applicable to the PDU session.  (NOTE 3) (NOTE 4) (NOTE 6) |  |
| offlineChOnly | boolean | O | 0..1 | Indicates that the online charging method shall never be used for any PCC rule activated during the lifetime of the PDU session, when this attribute is present and set to "true".  Otherwise, the default value is "false" if omitted.  (NOTE 3) (NOTE 4) (NOTE 6) | OfflineChOnly |
| conds | map(ConditionData) | O | 1..N | A map of condition data with the content being as described in clause 5.6.2.9. The key used in this map for each entry is the condId attribute of the corresponding ConditionData. |  |
| revalidationTime | DateTime | O | 0..1 | Defines the time before which the NF service consumer shall have to re-request PCC rules. |  |
| pcscfRestIndication | boolean | O | 0..1 | Indicates that P-CSCF Restoration is requested or not.  - Set to "true": the P-CSCF Restoration is requested.  - Set to "false": the P-CSCF Restoration is not requested.  - The default value "false" applies if the attribute is not present and has not been supplied previously. | PCSCF-Restoration-Enhancement |
| policyCtrlReqTriggers | array(PolicyControlRequestTrigger) | O | 1..N | Defines the policy control request triggers subscribed by the PCF. |  |
| lastReqRuleData | array(RequestedRuleData) | O | 1..N | Defines the last list of rule control data requested by the PCF. |  |
| lastReqUsageData | RequestedUsageData | O | 0..1 | Indicates whether the last accumulated usage report is requested by the PCF or not, and includes references to the targeted usage monitoring data instances. | UMC |
| praInfos | map(PresenceInfoRm) | O | 1..N | Defines the PRA information provisioned by the PCF. The "praId" attribute within the PresenceInfo data type shall also be the key of the map. The "presenceState" attribute within the PresenceInfo data type shall not be supplied. | PRA |
| ipv4Index | IpIndex | C | 0..1 | Information that identifies the IP address allocation method for IPv4 address allocation. (NOTE 3) |  |
| ipv6Index | IpIndex | C | 0..1 | Information that identifies the IP address allocation method for IPv6 address allocation. (NOTE 3) |  |
| qosFlowUsage | QosFlowUsage | O | 0..1 | Indicates the required usage for default QoS flow. |  |
| relCause | SmPolicyAssociationReleaseCause | O | 0..1 | The cause for which the PCF requests the termination of the policy association. | RespBasedSessionRel |
| suppFeat | SupportedFeatures | C | 0..1 | Indicates the list of negotiated supported features.  This parameter shall be supplied by the PCF in the response to the POST request that requested the creation of an individual SM policy resource. |  |
| tsnBridgeManCont | BridgeManagementContainer | O | 0..1 | Transports TSC user plane node management information | TimeSensitiveNetworking |
| tsnPortManContDstt | PortManagementContainer | O | 0..1 | Transports port management information for the DS-TT port. | TimeSensitiveNetworking |
| tsnPortManContNwtts | array(PortManagementContainer) | O | 1..N | Transports port management information for one or more NW-TT ports. | TimeSensitiveNetworking |
| tscNotifUri | Uri | O | 0..1 | For PMIC/UMIC UPF event, notification target address of the TSCTSF or TSN AF receiving the TSC management information. | ExposureToTSC |
| tscNotifCorreId | string | C | 0..1 | Correlation identifier for TSC management information notifications.  It shall be provided if the “tscNotifUri” attribute is provided. | ExposureToTSC |
| redSessIndication | boolean | O | 0..1 | Indicates whether the PDU Session is a redundant PDU session:  - Set to "true": the PDU Session is a end to end redundant PDU session;  - Set to "false": the PDU Session is Not end to end redundant PDU session;  - Default value is "false" if omitted.  (NOTE 2) (NOTE 3) | Dual-Connectivity-redundant-UP-paths |
| uePolCont | UePolicyContainer | O | 0..1 | Indicates a UE policy container for the UE. Only applicable to the 5GS and EPC interworking scenario as defined in Annex B. | EpsUrsp |
| vplmnOffloadInfos | array(VplmnOffloadingInfo) | O | 1..N | Indicates the VPLMN Specific Offloading Policy Information. (NOTE 7) | HR-SBO |
| vplmnDlAmbr | VplmnDlAmbr | O | 0..1 | Indicates the VPLMN Specific  Authorized DL Session AMBR for Offloading, i.e. DL Aggregate Maximum Bit Rate for the Non-GBR QoS Flows of the PDU Session authorized for offloading to the local part of DN in VPLMN. | HR-SBO |
| locOffloadInfos | array(LocalOffloadingInfo) | O | 1..N | Contains the Local Offloading Policy Information. | LocalOffloading |
| sliceUsgCtrlInfo | SliceUsgCtrlInfo | O | 0..1 | Represents the network slice usage control information (e.g., slice PDU Session inactivity timer value) to be used to support and enforce network slice usage control. | NetSliceUsageCtrl |
| NOTE 1: For IPv4v6 PDU session, both the "ipv4Index" attribute and "ipv6Index" attribute may be provisioned by the PCF.  NOTE 2: This attribute shall not be removed if it was provisioned.  NOTE 3: This attribute may only be supplied by the PCF in the response to the initial POST request that requested the creation of an individual SM policy resource.  NOTE 4: If both the "offline" attribute and the "online" attribute are omitted by the PCF, and when the "OfflineChOnly" feature is supported, if the "offlineChOnly" attribute is set to "false" or omitted by the PCF, the default charging method pre-configured at the SMF, if available, shall be applied to the PDU session. If both offline and online charging methods are pre-configured at the SMF, the SMF shall determine which one of them to be applied to the PDU session based on local policy. The "offline" attribute and the "online" attribute shall not be simultaneously present with the same value, i.e., both set to true or both set to false.  NOTE 5: If the "chargingInfo" attribute is not supplied by the PCF, the charging information configured at the SMF shall be applied to the PDU session.  NOTE 6: When the "OfflineChOnly" feature is supported and the "offlineChOnly" attribute is present and set to "true", the "online" attribute and the "offline" attribute shall not be present.  NOTE 7: If the "vplmnId" attribute of the VplmnOffloadingInfo data type is provided, it shall correspond with the VPLMN that is currently set as the serving PLMN in this policy association. | | | | | |

Editor's Note: It is FFS to determine if the data type of locOffloadInfos shall be an array or a single element, depending on the final definition of the LocalOffloadingInfo data type in 3GPP TS 29.571.

\*\*\* Next Change \*\*\*

5.6.2.19 Type SmPolicyUpdateContextData

**Table 5.6.2.19-1: Definition of type SmPolicyUpdateContextData**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| repPolicyCtrlReqTriggers | array(PolicyControlRequestTrigger) | C | 1..N | The policy control request triggers which are met. It is omitted if no triggers are met such as in clauses 4.2.4.7 and 4.2.4.15. |  |
| accNetChIds | array(AccNetChId) | O | 1..N | Indicates the access network charging identifier for the whole PDU session. For EPS interworking scenarios, it indicates the access network charging identifier for the PCC rule(s) or the whole PDU session. |  |
| accessType | AccessType | O | 0..1 | The Access Type where the served UE is camping. |  |
| ratType | RatType | O | 0..1 | The RAT Type where the served UE is camping. |  |
| addAccessInfo | AdditionalAccessInfo | O | 0..1 | Indicates the combination of added Access Type and RAT Type for MA PDU session. | ATSSS |
| relAccessInfo | AdditionalAccessInfo | O | 0..1 | Indicates the combination of released Access Type and RAT Type for MA PDU session. | ATSSS |
| servingNetwork | PlmnIdNid | O | 0..1 | The serving network (a PLMN or an SNPN) where the served UE is camping. For the SNPN the NID together with the PLMN ID identifies the SNPN. |  |
| userLocationInfo | UserLocation | O | 0..1 | The location(s) where the served UE is camping. (NOTE 4) |  |
| ueTimeZone | TimeZone | O | 0..1 | The time zone where the served UE is camping. |  |
| ipv4Address | Ipv4Addr | O | 0..1 | The IPv4 Address of the served UE. |  |
| ipDomain | string | O | 0..1 | IPv4 address domain identifier.  (NOTE 2) |  |
| relIpv4Address | Ipv4Addr | O | 0..1 | Indicates the released IPv4 Address of the served UE. |  |
| ipv6AddressPrefix | Ipv6Prefix | O | 0..1 | The Ipv6 Address Prefix of the served UE. (NOTE 6) |  |
| relIpv6AddressPrefix | Ipv6Prefix | O | 0..1 | Indicates the released IPv6 Address Prefix of the served UE in multi-homing case. (NOTE 6) |  |
| relUeMac | MacAddr48 | O | 0..1 | Indicates the released MAC Address of the served UE. |  |
| ueMac | MacAddr48 | O | 0..1 | The MAC Address of the served UE. |  |
| subsSessAmbr | Ambr | O | 0..1 | UDM subscribed or DN-AAA authorized Session-AMBR. |  |
| authProfIndex | string | O | 0..1 | DN-AAA authorization profile index. | DN-Authorization |
| subsDefQos | SubscribedDefaultQos | O | 0..1 | Subscribed Default QoS Information. |  |
| vplmnQos | VplmnQos | O | 0..1 | QoS constraints in a VPLMN (NOTE 5) | VPLMN-QoS-Control |
| vplmnQosNotApp | boolean | O | 0..1 | If it is included and set to true, indicates that the QoS constraints in the VPLMN are not applicable. (NOTE 5) | VPLMN-QoS-Control |
| numOfPackFilter | integer | O | 0..1 | Contains the number of supported packet filter for signalled QoS rules.  (NOTE 1) |  |
| accuUsageReports | array(AccuUsageReport) | O | 1..N | Contains the accumulated usage report(s). | UMC |
| 3gppPsDataOffStatus | boolean | O | 0..1 | If it is included and set to true, the 3GPP PS Data Off is activated by the UE. | 3GPP-PS-Data-Off |
| appDetectionInfos | array(AppDetectionInfo) | O | 1..N | Reports the start/stop of the application traffic and detected SDF descriptions if applicable. | ADC |
| ruleReports | array(RuleReport) | O | 1..N | Used to report the PCC rule failure. |  |
| sessRuleReports | array(SessionRuleReport) | O | 1..N | Used to report the session rule failure. | SessionRuleErrorHandling |
| qncReports | array(QosNotificationControlInfo) | O | 1..N | QoS Notification Control information. |  |
| qosMonReports | array(QosMonitoringReport) | O | 1..N | QoS Monitoring reporting information with packet delay. It shall be present when the notified event is "QOS\_MONITORING" and packet delay measurements are available. | QosMonitoring |
| qosMonDatRateReps | array(QosMonitoringReport) | O | 1..N | QoS Monitoring reporting information with data rate measurements. It shall be present when the notified event is "QOS\_MONITORING" and data rate measurements are available. | EnQoSMon |
| qosMonCongReps | array(QosMonitoringReport) | O | 1..N | QoS Monitoring reporting information with congestion measurements. It shall be present when the notified event is "QOS\_MONITORING" and data rate measurements are available. | EnQoSMon |
| userLocationInfoTime | DateTime | O | 0..1 | Contains the NTP time at which the UE was last known to be in the location. (NOTE 3) |  |
| repPraInfos | map(PresenceInfo) | O | 1..N | Reports the changes of presence reporting area. The "praId" attribute within the PresenceInfo data type shall also be the key of the map. The "presenceState" attribute within the PresenceInfo data type shall be supplied. The "additionalPraId" attribute within the PresenceInfo data type shall not be supplied. | PRA |
| ueInitResReq | UeInitiatedResourceRequest | O | 0..1 | Indicates a UE requests specific QoS handling for selected SDF. |  |
| refQosIndication | boolean | O | 0..1 | If it is included and set to true, the reflective QoS is supported by the UE. If it is included and set to false, the reflective QoS is revoked by the UE. |  |
| qosFlowUsage | QosFlowUsage | O | 0..1 | Indicates the required usage for default QoS flow. |  |
| creditManageStatus | CreditManagementStatus | O | 0..1 | Indicates the reason of the credit management session failure. |  |
| servNfId | ServingNfIdentity | O | 0..1 | Contains the serving network function identity. |  |
| traceReq | TraceData | C | 0..1 | It shall be included if trace is required to be activated, modified or deactivated (see 3GPP TS 32.422 [24]). For trace modification, it shall contain a complete replacement of trace data.  For trace deactivation, it shall contain the Null value. |  |
| addIpv6AddrPrefixes | Ipv6Prefix | O | 0..1 | An additional Ipv6 Address Prefix of the served UE. (NOTE 6) | MultiIpv6AddrPrefix |
| addRelIpv6AddrPrefixes | Ipv6Prefix | O | 0..1 | Indicates an additional released IPv6 Address Prefix of the served UE. (NOTE 6) | MultiIpv6AddrPrefix |
| multiIpv6Prefixes | array(Ipv6Prefix) | O | 1..N | The Ipv6 Address Prefixes of the served UE. (NOTE 6) | UnlimitedMultiIpv6Prefix |
| multiRelIpv6Prefixes | array(Ipv6Prefix) | O | 1..N | Indicates the released IPv6 Address Prefixes of the served UE. (NOTE 6) | UnlimitedMultiIpv6Prefix |
| tsnBridgeInfo | TsnBridgeInfo | O | 0..1 | Transports TSC user plane node information. | TimeSensitiveNetworking |
| tsnBridgeManCont | BridgeManagementContainer | O | 0..1 | Transports TSC user plane node management information. | TimeSensitiveNetworking |
| tsnPortManContDstt | PortManagementContainer | O | 0..1 | When DS-TT functionality is used, transports TSN port management information for the DS-TT port. | TimeSensitiveNetworking |
| tsnPortManContNwtts | array(PortManagementContainer) | O | 1..N | When NW-TT functionality is used, transports TSN port management information for one or more NW-TT ports. | TimeSensitiveNetworking |
| tscNotifUri | Uri | O | 0..1 | For PMIC/UMIC UPF event notification target address of the TSCTSF or TSN AF receiving the TSC management information. | ExposureToTSC |
| tscNotifCorreId | string | O | 0..1 | Correlation identifier for TSC management information notifications. | ExposureToTSC |
| maPduInd | MaPduIndication | O | 0..1 | Contains the MA PDU session indication, i.e., MA PDU Request or MA PDU Network-Upgrade Allowed. (NOTE 1) | ATSSS |
| atsssCapab | AtsssCapability | O | 0..1 | Contains the ATSSS capability supported for the MA PDU session. (NOTE 1) | ATSSS |
| mulAddrInfos | array(IpMulticastAddressInfo) | O | 1..N | Contains the IP multicast address information. | WWC |
| policyDecFailureReports | array(PolicyDecisionFailureCode) | O | 1..N | Indicates the type(s) of the failed policy decision and/or condition data. | PolicyDecisionErrorHandling |
| invalidPolicyDecs | array(InvalidParam) | O | 1..N | Indicates the invalid parameters for the reported type(s) of the failed policy decision and/or condition data. | ExtPolicyDecisionErrorHandling |
| trafficDescriptors | array(DddTrafficDescriptor) | O | 1..N | Contains the traffic descriptor(s) | DDNEventPolicyControl |
| typesOfNotif | array(DlDataDeliveryStatus) | O | 1..N | Contains the type of notification of DDD Status. | DDNEventPolicyControl |
| pccRuleId | string | O | 0..1 | Contains the identifier of the PCC rule which is used for traffic detection of event (e.g. DDN failure). | DDNEventPolicyControl2 |
| interGrpIds | array(GroupId) | O | 1..N | Internal Group Identifier(s) of the served UE. | GroupIdListChange |
| satBackhaulCategory | SatelliteBackhaulCategory | O | 0..1 | Indicates the satellite backhaul category or non-satellite backhaul used for the PDU session.  If the "EnSatBackhaulCatChg" feature is supported, the dynamic satellite backhaul categories may also be provided. | SatBackhaulCategoryChg |
| pcfUeInfo | PcfUeCallbackInfo | O | 0..1 | PCF for the UE callback URI and SBA binding information. | AMInfluence |
| nwdafDatas | array(NwdafData) | O | 1..N | List of NWDAF Instance IDs and their associated Analytics IDs consumed by the NF service consumer. | EneNA |
| anGwStatus | boolean | O | 1..N | When it is included and set to "true", it indicates that the AN-Gateway has failed and that the PCF should refrain from sending policy decisions to the SMF until it is informed that the AN-Gateway has been recovered. (NOTE 1) | SGWRest |
| uePolCont | UePolicyContainer | C | 0..1 | Indicates a UE policy container received from the UE. (NOTE 1) (NOTE 7) | EpsUrsp |
| uePolFailReport | UePolicyTransferFailureCause | C | 0..1 | Indicates a failure delivery result for UE policy container. (NOTE 1) (NOTE 7) | EpsUrsp |
| urspEnfInfo | UrspEnforcementInfo | O | 0..1 | Contains the reporting of URSP rule enforcement information from the UE. | URSPEnforcement |
| sscMode | SscMode | O | 0..1 | SSC Mode of the PDU session.  It may be present when the "urspEnfInfo" attribute is present. | URSPEnforcement |
| ueReqDnn | Dnn | O | 0..1 | UE requested DNN.  It may be present when the "urspEnfInfo" attribute is present. | URSPEnforcement |
| ueReqPduSessionType | PduSessionType | O | 0..1 | UE requested PDU session Type.  It may be present when the "urspEnfInfo" attribute is present. | URSPEnforcement |
| l4sReports | array(L4sSupportInfo) | O | 1..N | ECN marking for L4S support report information. | L4S |
| altSliceInfo | Snssai | O | 0..1 | Contains the Alternative S-NSSAI. | NetSliceRepl |
| batOffsetInfo | BatOffsetInfoPcc | O | 0..1 | Contains the BAT offset and the optionally adjusted periodicity for the indicated PCC rule(s). | EnTSCAC |
| hrsboInd | boolean | O | 0..1 | HR-SBO support indication. If present and set to "true", it indicates that the HR-SBO is supported. If present and set to "false", it indicates that the HR-SBO is not supported. | HR-SBO |
| locOffloadInd | boolean | O | 0..1 | Local offloading support indication. Possible values:  - "true": local offloading management, i.e. offloading via an I-SMF, is allowed.  - "false": local offloading management, i.e. offloading via an I-SMF, is not allowed. | LocalOffloading |
| ueReachStatus | UeReachabilityStatus | O | 0..1 | Contains the UE reachability Status.  This attribute shall be present only when the notified event is "UE\_REACH\_STATUS\_CH". | UEUnreachable |
| retryAfter | Uinteger | O | 0..1 | Contains the estimated time duration (expressed in units of seconds) during which the UE is unreachable.  This attribute may be present only when the "ueReachStatus" attribute is present and set to "UNREACHABLE". | UEUnreachable |
| qosMonCapRepos | array(CapabilityReportRule) | O | 1..N | QoS monitoring notification is supported again or not for the indicated PCC rule(s).  This attribute shall be present only when the notified event is "QOS\_MON\_CAP\_REPO". | QoSMonCapRepo |
| NOTE 1: This attribute is only applicable to the 5GS and EPC/E-UTRAN interworking scenario as defined in Annex B.  NOTE 2: The value provided in this attribute is implementation specific. The only constraint is that the NF service consumer shall supply a different identifier for each overlapping address domain (e.g. the SMF NF instance identifier).  NOTE 3: The age of UE location included within the "userLocationInfoTime" attribute is the age of the 3GPP access UE location received from the AMF and shall be included only when the reported "userLocationInfo" attribute includes the UE location in the 3GPP access.  NOTE 4: The SMF may encode both 3GPP and non-3GPP access UE location in the "userLocationInfo" attribute.  NOTE 5: Only one of "vplmnQos" or "vplmnQosNotApp" attributes may be present.  NOTE 6: When the "WWC" feature is supported, according to 3GPP TS 23.316 [42], clause 8.3.1 and 4.6.2, more than one IPv6 prefix shorter than /64 or more than one full IPv6 addres with a /128 prefix may be allocated to the RG. When feature MultiIpv6AddrPrefix is supported, additional IPv6 prefix shorter than /64 or full IPv6 address with a /128 prefix may be reported encoded as the "addIpv6AddrPrefixes" and the "addRelIpv6AddrPrefixes" attributes, , if the "MultiIpv6AddrPrefix" feature is supported, or as the "multiIpv6Prefixes" and the "multiRelIpv6Prefixes" attributes, if the "UnlimitedMultiIpv6Prefix" feature is supported. If the attribute "multiIpv6Prefixes" is provided, then attributes "ipv6AddressPrefix" and "addIpv6AddrPrefixes" shall be both absent. If the attribute "multiRelIpv6Prefixes" is provided, then attributes "relIpv6AddressPrefix" and "addRelIpv6AddrPrefixes" shall be both absent.  NOTE 7: When the "EpsUrsp" feature is supported, the "uePolCont" attribute and "uePolFailReport" attribute are mutually exclusive. | | | | | |

Editor's Note: The conditions/applicability of locOffloadInd in the Update case (e.g. upon AMF relocation with same PCF) is FFS.

\*\*\* Next Change \*\*\*

5.8 Feature negotiation

The optional features in table 5.8-1 are defined for the Npcf\_SMPolicyControl API. They shall be negotiated using the extensibility mechanism defined in clause 6.6 of 3GPP TS 29.500 [4].

**Table 5.8-1: Supported Features**

|  |  |  |
| --- | --- | --- |
| **Feature number** | **Feature Name** | **Description** |
| 1 | TSC | This feature indicates support for traffic steering control in the (S)Gi-LAN, steering the 5G-LAN type of services or routing of the user traffic to a local Data Network identified by the DNAI per AF request. If the NF service consumer supports this feature, the PCF shall behave as described in clause 4.2.6.2.6. |
| 2 | ResShare | This feature indicates the support of service data flows that share resources. If the NF service consumer supports this feature, the PCF shall behave as described in clause 4.2.6.2.8. |
| 3 | 3GPP-PS-Data-Off | This feature indicates the support of 3GPP PS Data off status change reporting. |
| 4 | ADC | This feature indicates the support of application detection and control. |
| 5 | UMC | Indicates that the usage monitoring control is supported. |
| 6 | NetLoc | This feature indicates the support of the Access Network Information Reporting for 5GS. |
| 7 | RAN-NAS-Cause | This feature indicates the support for the detailed release cause code information from the access network.  (NOTE) |
| 8 | ProvAFsignalFlow | This feature indicates support for the feature of IMS Restoration as described in clause 4.2.3.17. If NF service consumer supports this feature the PCF may provision AF signalling IP flow information. |
| 9 | PCSCF-Restoration-Enhancement | This feature indicates support of P-CSCF Restoration Enhancement. It is used for the NF service consumer to indicate if it supports P-CSCF Restoration Enhancement. |
| 10 | PRA | This feature indicates the support of presence reporting area change reporting. The support of the update of a UE Dedicated Presence Reporting Area is unspecified. |
| 11 | RuleVersioning | This feature indicates the support of PCC rule versioning as defined in clause 4.2.6.2.14. |
| 12 | SponsoredConnectivity | This feature indicates support for sponsored data connectivity feature. If the NF service consumer supports this feature, the PCF may authorize sponsored data connectivity to the subscriber. |
| 13 | RAN-Support-Info | This feature indicates the support of maximum packet loss rate value(s) for uplink and/or downlink voice service data flow(s). |
| 14 | PolicyUpdateWhenUESuspends | This feature indicates the support of report when the UE is suspended and then resumed from suspend state. Only applicable to the interworking scenario as defined in Annex B. |
| 15 | AccessTypeCondition | This feature indicates the support of access type conditioned authorized Session-AMBR as defined in clause 4.2.6.3.2.4. |
| 16 | MultiIpv6AddrPrefix | This feature indicates the support of additional new/removed (up to two) Ipv6 address prefixes reporting. |
| 17 | SessionRuleErrorHandling | This feature indicates the support of session rule error handling. |
| 18 | AF\_Charging\_Identifier | This feature indicates the support of long character strings as charging identifiers. |
| 19 | ATSSS | This feature indicates the support of the access traffic switching, steering and splitting functionality as defined in clauses 4.2.6.2.17 and 4.2.6.3.4. |
| 20 | PendingTransaction | This feature indicates support for the race condition handling as defined in 3GPP TS 29.513 [7]. |
| 21 | URLLC | This feature indicates support of Ultra-Reliable Low-Latency Communication (URLLC) requirements, i.e. AF application relocation acknowledgement requirement and UE address(es) preservation. The TSC feature shall be supported in order to support this feature. |
| 22 | MacAddressRange | Indicates the support of a set of MAC addresses with a specific range in the traffic filter. |
| 23 | WWC | Indicates support of wireless and wireline convergence access as defined in annex C. |
| 24 | QosMonitoring | Indicates support of QoS monitoring as defined in clause 4.2.3.25 and 4.2.4.24. Reporting of monitoring data applies to packet delay information when only this feature is supported. |
| 25 | AuthorizationWithRequiredQoS | Indicates support of policy authorization for the AF session with required QoS as defined in clause 4.2.3.22. |
| 26 | EnhancedBackgroundDataTransfer | Indicates the support of applying the Background Data Transfer Policy to a future PDU session. |
| 27 | DN-Authorization | This feature indicates the support of DN-AAA authorization data for policy control. |
| 28 | PDUSessionRelCause | Indicates the support of "PS\_TO\_CS\_HO" PDU session release cause. |
| 29 | SamePcf | This feature indicates the support of same PCF selection for the parameter's combination. |
| 30 | ADCmultiRedirection | This feature indicates support for multiple redirection information in application detection and control. It requires the support of ADC feature. |
| 31 | RespBasedSessionRel | Indicates support of handling PDU session termination functionality as defined in clause 4.2.4.22. |
| 32 | TimeSensitiveNetworking | Indicates that the 5G System is integrated within the external network as a TSN bridge. |
| 33 | EMDBV | This feature indicates the support of the ExtMaxDataBurstVol data type defined in 3GPP TS 29.571 [11]. The use of this data type is specified in clause 4.2.2.1. |
| 34 | DNNSelectionMode | This feature indicates the support of DNN selection mode. |
| 35 | EPSFallbackReport | This feature indicates the support of the report of EPS Fallback as defined in clauses B.3.3.2 and B.3.4.6. |
| 36 | PolicyDecisionErrorHandling | This feature indicates the support of the error report of the policy decision and/or condition data which is not referred by any PCC rule or session rule as defined in clause 4.2.3.26 and 4.2.4.26. |
| 37 | DDNEventPolicyControl | This feature indicates the support for policy control in the case of DDN Failure and Delivery Status events as defined in clause 4.2.4.27. |
| 38 | ReallocationOfCredit | This feature indicates the support of notifications of reallocation of credit. |
| 39 | BDTPolicyRenegotiation | This feature indicates the support of the BDT policy re-negotiation. |
| 40 | ExtPolicyDecisionErrorHandling | This feature indicates the support of the error report of a faulty SM policy decision parameter as defined in clause 4.2.3.26 and 4.2.4.26. It requires the support of PolicyDecisionErrorHandling feature. |
| 41 | ImmediateTermination | This feature indicates the support of the termination the PDU session when the NF service consumer cannot ensure the UE, RAN, AMF, or UPF can revert to the status before the PDU session modification occurred, as defined in clause 4.2.4.21. |
| 42 | AggregatedUELocChanges | This feature indicates the support of notifications of serving area (i.e. tracking area) and/or serving cell changes. |
| 43 | ES3XX | Extended Support for 3xx redirections. This feature indicates the support of redirection for any service operation, according to Stateless NF procedures as specified in clauses 6.5.3.2 and 6.5.3.3 of 3GPP TS 29.500 [4] and according to HTTP redirection principles for indirect communication, as specified in clause 6.10.9 of 3GPP TS 29.500 [4]. |
| 44 | GroupIdListChange | This feature indicates the support for the notification of changes in the list of internal group identifiers. |
| 45 | DisableUENotification | Indicates the support of disabling QoS flow parameters signalling to the UE when the SMF is notified by the NG-RAN of changes in the fulfilled QoS situation. This feature requires that the AuthorizationWithRequiredQoS featute is also supported. |
| 46 | OfflineChOnly | This feature enables the PCF to signal the "PDU Session with offline charging only" indication as defined in clause 4.2.2.3.3. |
| 47 | Dual-Connectivity-redundant-UP-paths | Indicates the support of policy authorization of end to end redundant user plane path using dual connectivity as described in clause 4.2.2.20. |
| 48 | DDNEventPolicyControl2 | This feature indicates the support for the policy control removal in the case of DDN Failure and/or Delivery Status event(s) is cancelled as defined in clause 4.2.4.27. The DDNEventPolicyControl feature shall be supported in order to support this feature. |
| 49 | VPLMN-QoS-Control | Indicates the support of QoS constraints from the VPLMN for the derivation of the authorized Session-AMBR and authorized default QoS. |
| 50 | 2G3GIWK | This feature indicates the support of GERAN and UTRAN access over N7 interface. |
| 51 | TimeSensitiveCommunication | Indicates that the 5G System is integrated within the external network as a TSC user plane node to enable the Time Sensitive Communications and Time Synchronization. This feature requires that the TimeSensitiveNetworking feature is also supported. |
| 52 | AF\_latency | This feature indicates the support of Edge relocation considering user plane latency. This feature requires that the TSC feature is also supported. |
| 53 | SatBackhaulCategoryChg | This feature indicates the support of notification of a change between different satellite backhaul categories, or between satellite backhaul and non-satellite backhaul. |
| 54 | CHFsetSupport | Indicates the support of CHF redundancy and failover mechanisms based on CHF instance availability within a CHF Set, as described in clause 4.2.2.3.1. |
| 55 | EnATSSS | Indicates the support of ATSSS enhancement. It requires the support of ATSSS feature. |
| 56 | MPSforDTS | Indicates support of the MPSfor DTS feature as described in clause 4.2.6.2.12.4. |
| 57 | RoutingInfoRemoval | Indicates the support of the removal of the "routeToLocs" attribute from the TrafficControlData instance. |
| 58 | ePRA | This feature indicates the support of presence reporting area change reporting. It additionally supports the update of the elements of a UE Dedicated Presence Reporting Area by the full replacement of the previously provided one comparing with the PRA feature. |
| 59 | AMInfluence | Indicates the support of the delivery of the PCF for the UE request to be notified by the PCF for the PDU session about PDU session established/terminated events. |
| 60 | PvsSupport | This feature indicates the support of SNPN UE Remote Provisioning via User Plane as described in clause 4.2.2.21. |
| 61 | EneNA | This feature indicates the support of NWDAF data reporting. |
| 62 | BIUMR | This feature bit indicates whether the NF Service Consumer (e.g. SMF) and PCF supports Binding Indication Update for multiple resource contexts specified in clauses 6.12.1 and 5.2.3.2.6 of 3GPP TS 29.500 [4]. |
| 63 | EASIPreplacement | This feature indicates the support of EAS IP replacement. This feature requires that the TSC feature is also supported. |
| 64 | ExposureToEAS | This feature indicates the support of exposure of QoS monitoring results to local AF. This feature requires that QosMonitoring feature is also supported. |
| 65 | SimultConnectivity | This feature indicates the support of temporary simultaneously connectivity at edge relocation. This feature requires that the TSC feature is also supported. |
| 66 | SGWRest | This feature indicates the support of SGW Restoration procedures. Only applicable to the interworking scenario as defined in Annex B. |
| 67 | ReleaseToReactivate | This feature indicates that the PCF can request the SMF for reactivation of a PDU session based on an SM Policy Association release cause. |
| 68 | EASDiscovery | This feature indicates the support of EAS (re)discovery. |
| 69 | AccNetChargId\_String | This feature indicates the support of long character strings as access network charging identifier. |
| 70 | WLAN\_Location | This feature indicates the support of the report of the WLAN location information received from the ePDG/EPC, if available. It is only applicable to EPS interworking scenarios as specified in Annex B. |
| 71 | PackFiltAllocPrecedence | This feature indicates the support of the control of the maximum number of packet filters in the EPS network in the EPS interworking scenarios as described in Annex B. |
| 72 | SatBackhaulCategoryChg\_v2 | This feature indicates the support of the indication of satellite backhaul categories, or the indication of non-satellite backhaul during the response to the update notify request. |
| 73 | PacketDelayFailureReport | Indicates the support of packet delay failure report as part of QoS Monitoring procedures. This feature requires that QosMonitoring feature is supported. |
| 74 | AltQoSProfilesSupportReport | This feature indicates the support of the report of whether Alternative QoS parameters are supported by NG-RAN. This feature requires that AuthorizationWithRequiredQoS feature is also supported. |
| 75 | Ext2PolicyDecisionErrorHandling | This feature indicates the support of the error report of the policy decision and/or condition data which is not referred by any PCC rule or session rule when no PCC rules and no session rules are provided and the handling of partial errors.  It requires the support of ExtPolicyDecisionErrorHandling feature. |
| 76 | UEUnreachable | This feature indicates the support for the reporting of UE temporarily unavailable. |
| 77 | EnTSCAC | Indicates the support of extensions to TSCAC and the RAN feedback for BAT offset and adjusted periodicity.  This feature requires that TimeSensitiveCommunication feature is also supported. |
| 78 | MTU\_Size | This feature indicates the support of the report of the MTU size of the device side port. This feature requires that the TimeSensitiveCommunication feature is also supported. |
| 79 | EnSatBackhaulCatChg | This feature indicates the support of notification of dynamic satellite backhaul categories.  It requires the support of SatBackhaulCategoryChg and SatBackhaulCategoryChg\_v2 features. |
| 80 | SFC | This feature indicates support for application function influence on service function chaining(s).  It requires the support of TSC feature. |
| 81 | EpsUrsp | This feature indicates the support of URSP provisioning in EPS. Only applicable to the interworking scenario as defined in Annex B. |
| 82 | CommonEASDNAI | This feature controls the support of the common EAS/DNAI selection. It requires the support of TSC feature. |
| 83 | UnlimitedMultiIpv6Prefix | This feature indicates the support of multiple Ipv6 address prefixes reporting. |
| 84 | NscSupportedFeatures | This feature indicates the support of provisioning of the Network Function Service Consumer features supported in Nsmf\_EventExposure service as described in 3GPP TS 29.508 [12]. |
| 85 | URSPEnforcement | This feature indicates the support of awareness of URSP rule enforcement |
| 86 | VBCforIMS | This feature indicates the support of provisioning of the caller and callee informations in volume based charging for IMS as defined in clause A.16 of 3GPP TS 29.214 [18] (replacing PCRF with PCF). |
| 87 | ExposureToTSC | This feature indicates the support of the direct event notification of TSC management information from the UPF to the TSCTSF or TSN AF in 5GC.  This feature requires that TimeSensitiveCommunication feature is also supported. |
| 88 | NetSliceRepl | This feature indicates the support of the network slice replacement functionality introduced in this specification as part of the end-to-end network slicing functionality.  The following functionalities are supported:  - Support the reporting of the network slice replacement information to the PCF. |
| 89 | SessQoSModEnforcementFailure | This feature indicates the support of the report PDU session modification failure because the enforcement of the default QoS modification or session-AMBR modification of the active session rule failed. |
| 90 | HR-SBO | This feature indicates the support of VPLMN specific Offloading policy in Home Routed deployments with Session Breakout (HR-SBO). |
| 91 | EnATSSS\_v2 | Indicates the support of ATSSS enhancements which includes REDUNDANT steering mode, MPQUIC steering functionality and MA PDU session interworking enhancements. It requires the support of the EnATSSS features. |
| 92 | NetSliceUsageCtrl | This feature indicates the support of the network slice usage control functionality introduced in this specification as part of the end-to-end network slicing functionality.  The following functionalities are supported:  - Support the provisioning by the PCF of the network slice usage control information (e.g., slice PDU session inactivity timer value). |
| 93 | VPLMN-5QIPrioLevel | Indicates the support of the indication of the VPLMN supported 5QI priority level when the required 5QI Priority Level is different from the standardized Default Priority Level value in the QoS characteristics Table 5.7.4-1 in 3GPP TS 23.501 [2].  This feature requires that VPLMN-QoS-Control feature is also supported. |
| 94 | PDUSetHandling | This feature indicates the support of PDU Set handling. This feature may be used for eXtended Reality (XR) and interactive media services. |
| 95 | EnQoSMon | This feature indicates the support of enhanced QoS monitoring functionality, i.e. the report of the congestion information, and/or, the data rate information monitoring.  This feature requires that QosMonitoring feature is supported. |
| 96 | PowerSaving | This feature indicates the PCC support for UE Power Saving management.  The following functionalities are supported:  - Policy provisioning of Periodicity and N6 Traffic Parameters to be measured.  - End of Data Burst Handling. |
| 97 | L4S | This feature indicates the support of the PCF indication of ECN marking for L4S support. |
| 98 | UPEAS | This feature indicates the support of UPF enhancements for exposure related to the identification of QoS monitoring event exposure subscription. |
| 99 | QoSMonCapRepo | This feature indicates the support QoS Monitoring Capability Report.  This feature requires that QosMonitoring feature is supported. |
| 100 | LocalOffloading | This feature indicates the support of Local Offloading Policy, i.e. local offloading via an I-SMF. |
| NOTE: 5GS and EPS release cause code information is supported. The EPS release cause code information from the access network is only applicable to EPS interworking scenarios as specified in Annex B. | | |

Editor's Note: Whether the QoSMonCapRepo feature can be applied or depended separately to/on QosMonitoring or Rel-18 QoS Monitoring functinaly(e.g. EnQoSMon) is FFS.

\*\*\* Next Change \*\*\*

A.2 Npcf\_SMPolicyControl API

openapi: 3.0.0

info:

title: Npcf\_SMPolicyControl API

version: 1.4.0-alpha

description: |

Session Management Policy Control Service

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externalDocs:

description: 3GPP TS 29.512 V19.0.0; 5G System; Session Management Policy Control Service.

url: 'https://www.3gpp.org/ftp/Specs/archive/29\_series/29.512/'

security:

- {}

- oAuth2ClientCredentials:

- npcf-smpolicycontrol

servers:

- url: '{apiRoot}/npcf-smpolicycontrol/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 4.4 of 3GPP TS 29.501

paths:

/sm-policies:

post:

summary: Create a new Individual SM Policy.

operationId: CreateSMPolicy

tags:

- SM Policies (Collection)

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/SmPolicyContextData'

responses:

'201':

description: Created

content:

application/json:

schema:

$ref: '#/components/schemas/SmPolicyDecision'

headers:

Location:

description: Contains the URI of the newly created resource.

required: true

schema:

type: string

'308':

description: Permanent Redirect

headers:

Location:

description: >

Contains the URI of the PCF within the existing PCF binding information stored in

the BSF for the same UE ID, S-NSSAI and DNN combination.

required: true

schema:

type: string

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29571\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29571\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29571\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

callbacks:

SmPolicyUpdateNotification:

'{$request.body#/notificationUri}/update':

post:

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/SmPolicyNotification'

responses:

'200':

description: >

OK. The current applicable values corresponding to the policy control request

trigger is reported.

content:

application/json:

schema:

oneOf:

- $ref: '#/components/schemas/UeCampingRep'

- type: array

items:

$ref: '#/components/schemas/PartialSuccessReport'

minItems: 1

- type: array

items:

$ref: '#/components/schemas/PolicyDecisionFailureCode'

minItems: 1

'204':

description: No Content, Notification was succesfull

'307':

$ref: 'TS29571\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29571\_CommonData.yaml#/components/responses/308'

'400':

description: Bad Request.

content:

application/json:

schema:

$ref: '#/components/schemas/ErrorReport'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29571\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29571\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29571\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

SmPolicyControlTerminationRequestNotification:

'{$request.body#/notificationUri}/terminate':

post:

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/TerminationNotification'

responses:

'204':

description: No Content, Notification was successful

'307':

$ref: 'TS29571\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29571\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29571\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29571\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29571\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

/sm-policies/{smPolicyId}:

get:

summary: Read an Individual SM Policy

operationId: GetSMPolicy

tags:

- Individual SM Policy (Document)

parameters:

- name: smPolicyId

in: path

description: Identifier of a policy association.

required: true

schema:

type: string

responses:

'200':

description: OK. Resource representation is returned.

content:

application/json:

schema:

$ref: '#/components/schemas/SmPolicyControl'

'307':

$ref: 'TS29571\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29571\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29571\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

/sm-policies/{smPolicyId}/update:

post:

summary: Update an existing Individual SM Policy

operationId: UpdateSMPolicy

tags:

- Individual SM Policy (Document)

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/SmPolicyUpdateContextData'

parameters:

- name: smPolicyId

in: path

description: Identifier of a policy association.

required: true

schema:

type: string

responses:

'200':

description: OK. Updated policies are returned

content:

application/json:

schema:

$ref: '#/components/schemas/SmPolicyDecision'

'307':

$ref: 'TS29571\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29571\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29571\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29571\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29571\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

/sm-policies/{smPolicyId}/delete:

post:

summary: Delete an existing Individual SM Policy.

operationId: DeleteSMPolicy

tags:

- Individual SM Policy (Document)

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/SmPolicyDeleteData'

parameters:

- name: smPolicyId

in: path

description: Identifier of a policy association.

required: true

schema:

type: string

responses:

'204':

description: No content

'307':

$ref: 'TS29571\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29571\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29571\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29571\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29571\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{nrfApiRoot}/oauth2/token'

scopes:

npcf-smpolicycontrol: Access to the Npcf\_SMPolicyControl API

schemas:

SmPolicyControl:

description: >

Contains the parameters used to request the SM policies and the SM policies authorized by

the PCF.

type: object

properties:

context:

$ref: '#/components/schemas/SmPolicyContextData'

policy:

$ref: '#/components/schemas/SmPolicyDecision'

required:

- context

- policy

SmPolicyContextData:

description: Contains the parameters used to create an Individual SM policy resource.

type: object

properties:

accNetChId:

$ref: '#/components/schemas/AccNetChId'

chargEntityAddr:

$ref: '#/components/schemas/AccNetChargingAddress'

gpsi:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Gpsi'

supi:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Supi'

invalidSupi:

type: boolean

description: >

When this attribute is included and set to true, it indicates that the supi attribute

contains an invalid value.This attribute shall be present if the SUPI is not available

in the SMF or the SUPI is unauthenticated. When present it shall be set to true for an

invalid SUPI and false (default) for a valid SUPI.

interGrpIds:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/GroupId'

minItems: 1

pduSessionId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PduSessionId'

pduSessionType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PduSessionType'

chargingcharacteristics:

type: string

dnn:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Dnn'

dnnSelMode:

$ref: 'TS29502\_Nsmf\_PDUSession.yaml#/components/schemas/DnnSelectionMode'

notificationUri:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

accessType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AccessType'

ratType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

addAccessInfo:

$ref: '#/components/schemas/AdditionalAccessInfo'

servingNetwork:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PlmnIdNid'

userLocationInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'

ueTimeZone:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'

pei:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Pei'

ipv4Address:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

ipv6AddressPrefix:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

ipDomain:

type: string

description: Indicates the IPv4 address domain

subsSessAmbr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ambr'

authProfIndex:

type: string

description: Indicates the DN-AAA authorization profile index

subsDefQos:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SubscribedDefaultQos'

vplmnQos:

$ref: 'TS29502\_Nsmf\_PDUSession.yaml#/components/schemas/VplmnQos'

numOfPackFilter:

type: integer

description: Contains the number of supported packet filter for signalled QoS rules.

online:

type: boolean

description: >

If it is included and set to true, the online charging is applied to the PDU session.

offline:

type: boolean

description: >

If it is included and set to true, the offline charging is applied to the PDU session.

3gppPsDataOffStatus:

type: boolean

description: >

If it is included and set to true, the 3GPP PS Data Off is activated by the UE.

refQosIndication:

type: boolean

description: If it is included and set to true, the reflective QoS is supported by the UE.

traceReq:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/TraceData'

sliceInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Snssai'

altSliceInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Snssai'

qosFlowUsage:

$ref: '#/components/schemas/QosFlowUsage'

servNfId:

$ref: '#/components/schemas/ServingNfIdentity'

suppFeat:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

smfId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/NfInstanceId'

recoveryTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

maPduInd:

$ref: '#/components/schemas/MaPduIndication'

atsssCapab:

$ref: '#/components/schemas/AtsssCapability'

ipv4FrameRouteList:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4AddrMask'

minItems: 1

ipv6FrameRouteList:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

minItems: 1

satBackhaulCategory:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SatelliteBackhaulCategory'

pcfUeInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PcfUeCallbackInfo'

pvsInfo:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ServerAddressingInfo'

minItems: 1

onboardInd:

type: boolean

description: >

If it is included and set to true, it indicates that the PDU session is used for

UE Onboarding.

nwdafDatas:

type: array

items:

$ref: '#/components/schemas/NwdafData'

minItems: 1

urspEnfInfo:

$ref: '#/components/schemas/UrspEnforcementInfo'

sscMode:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SscMode'

ueReqDnn:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Dnn'

ueReqPduSessionType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PduSessionType'

hrsboInd:

type: boolean

description: >

HR-SBO support indication. If present and set to "true", it indicates that the HR-SBO is

supported. Default value is "false" if omitted.

locOffloadInd:

type: boolean

description: Indicates whether local offloading management is allowed.

uePolFailReport:

$ref: 'TS29525\_Npcf\_UEPolicyControl.yaml#/components/schemas/UePolicyTransferFailureCause'

required:

- supi

- pduSessionId

- pduSessionType

- dnn

- notificationUri

- sliceInfo

SmPolicyDecision:

description: Contains the SM policies authorized by the PCF.

type: object

properties:

sessRules:

type: object

additionalProperties:

$ref: '#/components/schemas/SessionRule'

minProperties: 1

description: >

A map of Sessionrules with the content being the SessionRule as described in

clause 5.6.2.7. The key used in this map for each entry is the sessRuleId

attribute of the corresponding SessionRule.

pccRules:

type: object

additionalProperties:

$ref: '#/components/schemas/PccRule'

minProperties: 1

description: >

A map of PCC rules with the content being the PCCRule as described in

clause 5.6.2.6. The key used in this map for each entry is the pccRuleId

attribute of the corresponding PccRule.

nullable: true

pcscfRestIndication:

type: boolean

description: >

If it is included and set to true, it indicates the P-CSCF Restoration is requested.

qosDecs:

type: object

additionalProperties:

$ref: '#/components/schemas/QosData'

minProperties: 1

description: >

Map of QoS data policy decisions. The key used in this map for each entry is the qosId

attribute of the corresponding QosData.

chgDecs:

type: object

additionalProperties:

$ref: '#/components/schemas/ChargingData'

minProperties: 1

description: >

Map of Charging data policy decisions. The key used in this map for each entry

is the chgId attribute of the corresponding ChargingData.

nullable: true

chargingInfo:

$ref: '#/components/schemas/ChargingInformation'

traffContDecs:

type: object

additionalProperties:

$ref: '#/components/schemas/TrafficControlData'

minProperties: 1

description: >

Map of Traffic Control data policy decisions. The key used in this map for each entry

is the tcId attribute of the corresponding TrafficControlData.

umDecs:

type: object

additionalProperties:

$ref: '#/components/schemas/UsageMonitoringData'

minProperties: 1

description: >

Map of Usage Monitoring data policy decisions. The key used in this map for each entry

is the umId attribute of the corresponding UsageMonitoringData.

nullable: true

qosChars:

type: object

additionalProperties:

$ref: '#/components/schemas/QosCharacteristics'

minProperties: 1

description: >

Map of QoS characteristics for non standard 5QIs. This map uses the 5QI values as keys.

qosMonDecs:

type: object

additionalProperties:

$ref: '#/components/schemas/QosMonitoringData'

minProperties: 1

description: >

Map of QoS Monitoring data policy decisions. The key used in this map for each entry

is the qmId attribute of the corresponding QosMonitoringData.

nullable: true

reflectiveQoSTimer:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec'

conds:

type: object

additionalProperties:

$ref: '#/components/schemas/ConditionData'

minProperties: 1

description: >

A map of condition data with the content being as described in clause 5.6.2.9. The key

used in this map for each entry is the condId attribute of the corresponding

ConditionData.

nullable: true

revalidationTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

offline:

type: boolean

description: >

Indicates the offline charging is applicable to the PDU session when it is included and

set to true.

online:

type: boolean

description: >

Indicates the online charging is applicable to the PDU session when it is included and

set to true.

offlineChOnly:

type: boolean

default: false

description: >

Indicates that the online charging method shall never be used for any PCC rule activated

during the lifetime of the PDU session.

policyCtrlReqTriggers:

type: array

items:

$ref: '#/components/schemas/PolicyControlRequestTrigger'

minItems: 1

description: Defines the policy control request triggers subscribed by the PCF.

nullable: true

lastReqRuleData:

type: array

items:

$ref: '#/components/schemas/RequestedRuleData'

minItems: 1

description: Defines the last list of rule control data requested by the PCF.

lastReqUsageData:

$ref: '#/components/schemas/RequestedUsageData'

praInfos:

type: object

additionalProperties:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PresenceInfoRm'

minProperties: 1

description: >

Map of PRA information. The praId attribute within the PresenceInfo data type is the key

of the map.

nullable: true

ipv4Index:

$ref: 'TS29519\_Policy\_Data.yaml#/components/schemas/IpIndex'

ipv6Index:

$ref: 'TS29519\_Policy\_Data.yaml#/components/schemas/IpIndex'

qosFlowUsage:

$ref: '#/components/schemas/QosFlowUsage'

relCause:

$ref: '#/components/schemas/SmPolicyAssociationReleaseCause'

suppFeat:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

tsnBridgeManCont:

$ref: '#/components/schemas/BridgeManagementContainer'

tsnPortManContDstt:

$ref: '#/components/schemas/PortManagementContainer'

tsnPortManContNwtts:

type: array

items:

$ref: '#/components/schemas/PortManagementContainer'

minItems: 1

tscNotifUri:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

tscNotifCorreId:

type: string

description: >

Correlation identifier for TSC management information notifications.

redSessIndication:

type: boolean

description: >

Indicates whether the PDU session is a redundant PDU session. If absent it means the PDU

session is not a redundant PDU session.

uePolCont:

$ref: '#/components/schemas/UePolicyContainer'

sliceUsgCtrlInfo:

$ref: '#/components/schemas/SliceUsgCtrlInfo'

vplmnOffloadInfos:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/VplmnOffloadingInfo'

minItems: 1

description: List of VPLMN Specific offloading information.

nullable: true

locOffloadInfos:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/LocalOffloadingInfo'

minItems: 1

description: List of local offloading information.

nullable: true

vplmnDlAmbr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/VplmnDlAmbr'

SmPolicyNotification:

description: Represents a notification on the update of the SM policies.

type: object

properties:

resourceUri:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

smPolicyDecision:

$ref: '#/components/schemas/SmPolicyDecision'

PccRule:

description: Contains a PCC rule information.

type: object

properties:

flowInfos:

type: array

items:

$ref: '#/components/schemas/FlowInformation'

minItems: 1

description: An array of IP flow packet filter information.

appId:

type: string

description: A reference to the application detection filter configured at the UPF.

appDescriptor:

$ref: '#/components/schemas/ApplicationDescriptor'

contVer:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/ContentVersion'

protoDescDl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ProtocolDescription'

protoDescUl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ProtocolDescription'

pccRuleId:

type: string

description: Univocally identifies the PCC rule within a PDU session.

precedence:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

afSigProtocol:

$ref: '#/components/schemas/AfSigProtocol'

appReloc:

type: boolean

description: Indication of application relocation possibility.

easRedisInd:

type: boolean

description: Indicates the EAS rediscovery is required.

refQosData:

type: array

items:

type: string

minItems: 1

maxItems: 1

description: >

A reference to the QosData policy decision type. It is the qosId described in

clause 5.6.2.8.

refAltQosParams:

type: array

items:

type: string

minItems: 1

description: >

A Reference to the QosData policy decision type for the Alternative QoS parameter sets

of the service data flow.

refTcData:

type: array

items:

type: string

minItems: 1

maxItems: 1

description: >

A reference to the TrafficControlData policy decision type. It is the tcId described in

clause 5.6.2.10.

refChgData:

type: array

items:

type: string

minItems: 1

maxItems: 1

description: >

A reference to the ChargingData policy decision type. It is the chgId described in

clause 5.6.2.11.

nullable: true

refChgN3gData:

type: array

items:

type: string

minItems: 1

maxItems: 1

description: >

A reference to the ChargingData policy decision type only applicable to Non-3GPP access

if "ATSSS" feature is supported. It is the chgId described in clause 5.6.2.11.

nullable: true

refUmData:

type: array

items:

type: string

minItems: 1

maxItems: 1

description: >

A reference to UsageMonitoringData policy decision type. It is the umId described in

clause 5.6.2.12.

nullable: true

refUmN3gData:

type: array

items:

type: string

minItems: 1

maxItems: 1

description: >

A reference to UsageMonitoringData policy decision type only applicable to Non-3GPP

access if "ATSSS" feature is supported. It is the umId described in clause 5.6.2.12.

nullable: true

refCondData:

type: string

description: >

A reference to the condition data. It is the condId described in clause 5.6.2.9.

nullable: true

refQosMon:

type: array

items:

type: string

minItems: 1

description: >

A reference to the QosMonitoringData policy decision type. It is the qmId described in

clause 5.6.2.40.

nullable: true

addrPreserInd:

type: boolean

nullable: true

tscaiInputDl:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TscaiInputContainer'

tscaiInputUl:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TscaiInputContainer'

tscaiTimeDom:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

capBatAdaptation:

type: boolean

description: >

Indicates the capability for AF to adjust the burst sending time, when it is provided

and set to "true". The default value is "false" if omitted.

ddNotifCtrl:

$ref: '#/components/schemas/DownlinkDataNotificationControl'

ddNotifCtrl2:

$ref: '#/components/schemas/DownlinkDataNotificationControlRm'

disUeNotif:

type: boolean

nullable: true

packFiltAllPrec:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

nscSuppFeats:

type: object

additionalProperties:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

minProperties: 1

description: >

Identifies a list of Network Function Service Consumer supported per service. The key

used in this map for each entry is the ServiceName value as defined in

3GPP TS 29.510[29].

callInfo:

$ref: '#/components/schemas/CallInfo'

traffParaData:

$ref: '#/components/schemas/TrafficParaData'

required:

- pccRuleId

nullable: true

SessionRule:

description: Contains session level policy information.

type: object

properties:

authSessAmbr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ambr'

authDefQos:

$ref: '#/components/schemas/AuthorizedDefaultQos'

sessRuleId:

type: string

description: Univocally identifies the session rule within a PDU session.

refUmData:

type: string

description: >

A reference to UsageMonitoringData policy decision type. It is the umId described in

clause 5.6.2.12.

nullable: true

refUmN3gData:

type: string

description: >

A reference to UsageMonitoringData policy decision type to apply for Non-3GPP access. It

is the umId described in clause 5.6.2.12.

nullable: true

refCondData:

type: string

description: >

A reference to the condition data. It is the condId described in clause 5.6.2.9.

nullable: true

required:

- sessRuleId

nullable: true

QosData:

description: Contains the QoS parameters.

type: object

properties:

qosId:

type: string

description: Univocally identifies the QoS control policy data within a PDU session.

5qi:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/5Qi'

maxbrUl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRateRm'

maxbrDl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRateRm'

gbrUl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRateRm'

gbrDl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRateRm'

arp:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Arp'

qnc:

type: boolean

description: >

Indicates whether notifications are requested from 3GPP NG-RAN when the GFBR can no longer

(or again) be guaranteed for a QoS Flow during the lifetime of the QoS Flow.

priorityLevel:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/5QiPriorityLevelRm'

averWindow:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AverWindowRm'

maxDataBurstVol:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/MaxDataBurstVolRm'

reflectiveQos:

type: boolean

description: >

Indicates whether the QoS information is reflective for the corresponding service data

flow.

sharingKeyDl:

type: string

description: >

Indicates, by containing the same value, what PCC rules may share resource in downlink

direction.

sharingKeyUl:

type: string

description: >

Indicates, by containing the same value, what PCC rules may share resource in uplink

direction.

maxPacketLossRateDl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketLossRateRm'

maxPacketLossRateUl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketLossRateRm'

defQosFlowIndication:

type: boolean

description: >

Indicates that the dynamic PCC rule shall always have its binding with the QoS Flow

associated with the default QoS rule

extMaxDataBurstVol:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ExtMaxDataBurstVolRm'

packetDelayBudget:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketDelBudget'

packetErrorRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketErrRate'

pduSetQosDl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PduSetQosParaRm'

pduSetQosUl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PduSetQosParaRm'

required:

- qosId

nullable: true

ConditionData:

description: Contains conditions of applicability for a rule.

type: object

properties:

condId:

type: string

description: Uniquely identifies the condition data within a PDU session.

activationTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTimeRm'

deactivationTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTimeRm'

accessType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AccessType'

ratType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

required:

- condId

nullable: true

TrafficControlData:

description: >

Contains parameters determining how flows associated with a PCC Rule are treated (e.g.

blocked, redirected, etc).

type: object

properties:

tcId:

type: string

description: Univocally identifies the traffic control policy data within a PDU session.

l4sInd:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/UplinkDownlinkSupport'

flowStatus:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/FlowStatus'

redirectInfo:

$ref: '#/components/schemas/RedirectInformation'

addRedirectInfo:

type: array

items:

$ref: '#/components/schemas/RedirectInformation'

minItems: 1

muteNotif:

type: boolean

description: Indicates whether applicat'on's start or stop notification is to be muted.

trafficSteeringPolIdDl:

type: string

description: >

Reference to a pre-configured traffic steering policy for downlink traffic at the SMF.

nullable: true

trafficSteeringPolIdUl:

type: string

description: >

Reference to a pre-configured traffic steering policy for uplink traffic at the SMF.

nullable: true

metadata:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Metadata'

routeToLocs:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RouteToLocation'

minItems: 1

description: A list of location which the traffic shall be routed to for the AF request

nullable: true

maxAllowedUpLat:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UintegerRm'

easIpReplaceInfos:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/EasIpReplacementInfo'

minItems: 1

description: Contains EAS IP replacement information.

nullable: true

traffCorreInd:

type: boolean

tfcCorreInfo:

$ref: 'TS29519\_Application\_Data.yaml#/components/schemas/TrafficCorrelationInfo'

simConnInd:

type: boolean

description: >

Indicates whether simultaneous connectivity should be temporarily maintained for the

source and target PSA.

simConnTerm:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec'

upPathChgEvent:

$ref: '#/components/schemas/UpPathChgEvent'

steerFun:

$ref: '#/components/schemas/SteeringFunctionality'

transMode:

$ref: '#/components/schemas/TransportMode'

steerModeDl:

$ref: '#/components/schemas/SteeringMode'

steerModeUl:

$ref: '#/components/schemas/SteeringMode'

mulAccCtrl:

$ref: '#/components/schemas/MulticastAccessControl'

candDnaiInd:

type: boolean

description: >

Indication of reporting candidate DNAI(s). If it is included and set to "true", the

candidate DNAI(s) for the PDU session need to be reported. Otherwise set to "false" or

omitted.

datEndMarkInd:

type: boolean

description: >

The data burst end marking is enabled if it is set to "true". Default value is "false" if

omitted.

required:

- tcId

nullable: true

ChargingData:

description: Contains charging related parameters.

type: object

properties:

chgId:

type: string

description: Univocally identifies the charging control policy data within a PDU session.

meteringMethod:

$ref: '#/components/schemas/MeteringMethod'

offline:

type: boolean

description: >

Indicates the offline charging is applicable to the PCC rule when it is included and set

to true.

online:

type: boolean

description: >

Indicates the online charging is applicable to the PCC rule when it is included and set

to true.

sdfHandl:

type: boolean

description: >

Indicates whether the service data flow is allowed to start while the SMF is waiting for

the response to the credit request.

ratingGroup:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatingGroup'

reportingLevel:

$ref: '#/components/schemas/ReportingLevel'

serviceId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ServiceId'

sponsorId:

type: string

description: Indicates the sponsor identity.

appSvcProvId:

type: string

description: Indicates the application service provider identity.

afChargingIdentifier:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ChargingId'

afChargId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ApplicationChargingId'

required:

- chgId

nullable: true

UsageMonitoringData:

description: Contains usage monitoring related control information.

type: object

properties:

umId:

type: string

description: Univocally identifies the usage monitoring policy data within a PDU session.

volumeThreshold:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/VolumeRm'

volumeThresholdUplink:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/VolumeRm'

volumeThresholdDownlink:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/VolumeRm'

timeThreshold:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSecRm'

monitoringTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTimeRm'

nextVolThreshold:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/VolumeRm'

nextVolThresholdUplink:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/VolumeRm'

nextVolThresholdDownlink:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/VolumeRm'

nextTimeThreshold:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSecRm'

inactivityTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSecRm'

exUsagePccRuleIds:

type: array

items:

type: string

minItems: 1

description: >

Contains the PCC rule identifier(s) which corresponding service data flow(s) shall be

excluded from PDU Session usage monitoring. It is only included in the

UsageMonitoringData instance for session level usage monitoring.

nullable: true

required:

- umId

nullable: true

RedirectInformation:

description: Contains the redirect information.

type: object

properties:

redirectEnabled:

type: boolean

description: Indicates the redirect is enable.

redirectAddressType:

$ref: '#/components/schemas/RedirectAddressType'

redirectServerAddress:

type: string

description: >

Indicates the address of the redirect server. If "redirectAddressType" attribute

indicates the IPV4\_ADDR, the encoding is the same as the Ipv4Addr data type defined in

3GPP TS 29.571.If "redirectAddressType" attribute indicates the IPV6\_ADDR, the encoding

is the same as the Ipv6Addr data type defined in 3GPP TS 29.571.If "redirectAddressType"

attribute indicates the URL or SIP\_URI, the encoding is the same as the Uri data type

defined in 3GPP TS 29.571.

FlowInformation:

description: Contains the flow information.

type: object

properties:

flowDescription:

$ref: '#/components/schemas/FlowDescription'

ethFlowDescription:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/EthFlowDescription'

packFiltId:

type: string

description: An identifier of packet filter.

packetFilterUsage:

type: boolean

description: The packet shall be sent to the UE.

tosTrafficClass:

type: string

description: >

Contains the Ipv4 Type-of-Service and mask field or the Ipv6 Traffic-Class field and

mask field.

nullable: true

spi:

type: string

description: the security parameter index of the IPSec packet.

nullable: true

flowLabel:

type: string

description: the Ipv6 flow label header field.

nullable: true

flowDirection:

$ref: '#/components/schemas/FlowDirectionRm'

SmPolicyDeleteData:

description: >

Contains the parameters to be sent to the PCF when an individual SM policy is deleted.

type: object

properties:

userLocationInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'

ueTimeZone:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'

servingNetwork:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PlmnIdNid'

userLocationInfoTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

ranNasRelCauses:

type: array

items:

$ref: '#/components/schemas/RanNasRelCause'

minItems: 1

description: Contains the RAN and/or NAS release cause.

accuUsageReports:

type: array

items:

$ref: '#/components/schemas/AccuUsageReport'

minItems: 1

description: Contains the usage report

pduSessRelCause:

$ref: '#/components/schemas/PduSessionRelCause'

QosCharacteristics:

description: Contains QoS characteristics for a non-standardized or a non-configured 5QI.

type: object

properties:

5qi:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/5Qi'

resourceType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/QosResourceType'

priorityLevel:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/5QiPriorityLevel'

packetDelayBudget:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketDelBudget'

packetErrorRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketErrRate'

averagingWindow:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AverWindow'

maxDataBurstVol:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/MaxDataBurstVol'

extMaxDataBurstVol:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ExtMaxDataBurstVol'

required:

- 5qi

- resourceType

- priorityLevel

- packetDelayBudget

- packetErrorRate

ChargingInformation:

description: Contains the addresses of the charging functions.

type: object

properties:

primaryChfAddress:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

secondaryChfAddress:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

primaryChfSetId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/NfSetId'

primaryChfInstanceId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/NfInstanceId'

secondaryChfSetId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/NfSetId'

secondaryChfInstanceId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/NfInstanceId'

required:

- primaryChfAddress

AccuUsageReport:

description: Contains the accumulated usage report information.

type: object

properties:

refUmIds:

type: string

description: >

An id referencing UsageMonitoringData objects associated with this usage report.

volUsage:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Volume'

volUsageUplink:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Volume'

volUsageDownlink:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Volume'

timeUsage:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec'

nextVolUsage:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Volume'

nextVolUsageUplink:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Volume'

nextVolUsageDownlink:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Volume'

nextTimeUsage:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec'

required:

- refUmIds

SmPolicyUpdateContextData:

description: >

Contains the policy control request trigger(s) that were met and the corresponding new

value(s) or the error report of the policy enforcement.

type: object

properties:

repPolicyCtrlReqTriggers:

type: array

items:

$ref: '#/components/schemas/PolicyControlRequestTrigger'

minItems: 1

description: The policy control reqeust trigges which are met.

accNetChIds:

type: array

items:

$ref: '#/components/schemas/AccNetChId'

minItems: 1

description: >

Indicates the access network charging identifier for the PCC rule(s) or whole PDU

session.

accessType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AccessType'

ratType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

addAccessInfo:

$ref: '#/components/schemas/AdditionalAccessInfo'

relAccessInfo:

$ref: '#/components/schemas/AdditionalAccessInfo'

servingNetwork:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PlmnIdNid'

userLocationInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'

ueTimeZone:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'

relIpv4Address:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

ipv4Address:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

ipDomain:

type: string

description: Indicates the IPv4 address domain

ipv6AddressPrefix:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

relIpv6AddressPrefix:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

addIpv6AddrPrefixes:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

addRelIpv6AddrPrefixes:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

multiIpv6Prefixes:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

minItems: 1

description: The multiple allocated IPv6 prefixes of the served UE.

multiRelIpv6Prefixes:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

minItems: 1

description: The multiple released IPv6 prefixes of the served UE.

relUeMac:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/MacAddr48'

ueMac:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/MacAddr48'

subsSessAmbr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ambr'

authProfIndex:

type: string

description: Indicates the DN-AAA authorization profile index

subsDefQos:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SubscribedDefaultQos'

vplmnQos:

$ref: 'TS29502\_Nsmf\_PDUSession.yaml#/components/schemas/VplmnQos'

vplmnQosNotApp:

type: boolean

description: >

If it is included and set to true, indicates that the QoS constraints in the VPLMN are

not applicable.

numOfPackFilter:

type: integer

description: Contains the number of supported packet filter for signalled QoS rules.

accuUsageReports:

type: array

items:

$ref: '#/components/schemas/AccuUsageReport'

minItems: 1

description: Contains the usage report

3gppPsDataOffStatus:

type: boolean

description: >

If it is included and set to true, the 3GPP PS Data Off is activated by the UE.

appDetectionInfos:

type: array

items:

$ref: '#/components/schemas/AppDetectionInfo'

minItems: 1

description: >

Report the start/stop of the application traffic and detected SDF descriptions

if applicable.

ruleReports:

type: array

items:

$ref: '#/components/schemas/RuleReport'

minItems: 1

description: Used to report the PCC rule failure.

sessRuleReports:

type: array

items:

$ref: '#/components/schemas/SessionRuleReport'

minItems: 1

description: Used to report the session rule failure.

qncReports:

type: array

items:

$ref: '#/components/schemas/QosNotificationControlInfo'

minItems: 1

description: QoS Notification Control information.

qosMonReports:

type: array

items:

$ref: '#/components/schemas/QosMonitoringReport'

minItems: 1

description: QoS Monitoring reporting information.

qosMonDatRateReps:

type: array

items:

$ref: '#/components/schemas/QosMonitoringReport'

minItems: 1

qosMonCongReps:

type: array

items:

$ref: '#/components/schemas/QosMonitoringReport'

minItems: 1

userLocationInfoTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

repPraInfos:

type: object

additionalProperties:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PresenceInfo'

minProperties: 1

description: >

Reports the changes of presence reporting area. The praId attribute within the

PresenceInfo data type is the key of the map.

ueInitResReq:

$ref: '#/components/schemas/UeInitiatedResourceRequest'

refQosIndication:

type: boolean

description: >

If it is included and set to true, the reflective QoS is supported by the UE. If it is

included and set to false, the reflective QoS is revoked by the UE.

qosFlowUsage:

$ref: '#/components/schemas/QosFlowUsage'

creditManageStatus:

$ref: '#/components/schemas/CreditManagementStatus'

servNfId:

$ref: '#/components/schemas/ServingNfIdentity'

traceReq:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/TraceData'

maPduInd:

$ref: '#/components/schemas/MaPduIndication'

atsssCapab:

$ref: '#/components/schemas/AtsssCapability'

tsnBridgeInfo:

$ref: '#/components/schemas/TsnBridgeInfo'

tsnBridgeManCont:

$ref: '#/components/schemas/BridgeManagementContainer'

tsnPortManContDstt:

$ref: '#/components/schemas/PortManagementContainer'

tsnPortManContNwtts:

type: array

items:

$ref: '#/components/schemas/PortManagementContainer'

minItems: 1

tscNotifUri:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

tscNotifCorreId:

type: string

description: >

Correlation identifier for TSC management information notifications.

mulAddrInfos:

type: array

items:

$ref: '#/components/schemas/IpMulticastAddressInfo'

minItems: 1

policyDecFailureReports:

type: array

items:

$ref: '#/components/schemas/PolicyDecisionFailureCode'

minItems: 1

description: Contains the type(s) of failed policy decision and/or condition data.

invalidPolicyDecs:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/InvalidParam'

minItems: 1

description: >

Indicates the invalid parameters for the reported type(s) of the failed policy decision

and/or condition data.

trafficDescriptors:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DddTrafficDescriptor'

minItems: 1

pccRuleId:

type: string

description: >

Contains the identifier of the PCC rule which is used for traffic detection of event.

typesOfNotif:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DlDataDeliveryStatus'

minItems: 1

interGrpIds:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/GroupId'

minItems: 1

satBackhaulCategory:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SatelliteBackhaulCategory'

pcfUeInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PcfUeCallbackInfo'

nwdafDatas:

type: array

items:

$ref: '#/components/schemas/NwdafData'

minItems: 1

nullable: true

anGwStatus:

type: boolean

description: >

When it is included and set to true, it indicates that the AN-Gateway has failed and

that the PCF should refrain from sending policy decisions to the SMF until it is

informed that the AN-Gateway has been recovered.

uePolCont:

$ref: '#/components/schemas/UePolicyContainer'

uePolFailReport:

$ref: 'TS29525\_Npcf\_UEPolicyControl.yaml#/components/schemas/UePolicyTransferFailureCause'

urspEnfInfo:

$ref: '#/components/schemas/UrspEnforcementInfo'

sscMode:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SscMode'

ueReqDnn:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Dnn'

ueReqPduSessionType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PduSessionType'

l4sReports:

type: array

items:

$ref: '#/components/schemas/L4sSupportInfo'

minItems: 1

description: ECN marking for L4S support availability in 5GS.

altSliceInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Snssai'

batOffsetInfo:

$ref: '#/components/schemas/BatOffsetInfoPcc'

hrsboInd:

type: boolean

description: >

HR-SBO support indication. If present and set to "true", it indicates that the HR-SBO is

supported. If present and set to "false", it indicates that the HR-SBO is not supported.

locOffloadInd:

type: boolean

description: Indicates whether local offloading management is allowed.

ueReachStatus:

$ref: '#/components/schemas/UeReachabilityStatus'

retryAfter:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

qosMonCapRepos:

type: array

items:

$ref: '#/components/schemas/CapabilityReportRule'

minItems: 1

description: QoS monitoring is supported or not for the indicated PCC rule(s).

allOf:

- not:

required: [multiIpv6Prefixes, ipv6AddressPrefix]

- not:

required: [multiIpv6Prefixes, addIpv6AddrPrefixes]

- not:

required: [multiRelIpv6Prefixes, relIpv6AddressPrefix]

- not:

required: [multiRelIpv6Prefixes, relAddIpv6AddrPrefixes]

UpPathChgEvent:

description: Contains the UP path change event subscription from the AF.

type: object

properties:

notificationUri:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

notifCorreId:

type: string

description: >

It is used to set the value of Notification Correlation ID in the notification sent by

the SMF.

dnaiChgType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DnaiChangeType'

afAckInd:

type: boolean

required:

- notificationUri

- notifCorreId

- dnaiChgType

nullable: true

TerminationNotification:

description: Represents a Termination Notification.

type: object

properties:

resourceUri:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

cause:

$ref: '#/components/schemas/SmPolicyAssociationReleaseCause'

required:

- resourceUri

- cause

AppDetectionInfo:

description: Contains the detected application's traffic information.

type: object

properties:

appId:

type: string

description: A reference to the application detection filter configured at the UPF

instanceId:

type: string

description: >

Identifier sent by the SMF in order to allow correlation of application Start and Stop

events to the specific service data flow description, if service data flow descriptions

are deducible.

sdfDescriptions:

type: array

items:

$ref: '#/components/schemas/FlowInformation'

minItems: 1

description: Contains the detected service data flow descriptions if they are deducible.

required:

- appId

AccNetChId:

description: >

Contains the access network charging identifier for the PCC rule(s) or for the whole

PDU session.

type: object

properties:

accNetChaIdValue:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ChargingId'

accNetChargId:

type: string

description: A character string containing the access network charging id.

refPccRuleIds:

type: array

items:

type: string

minItems: 1

description: >

Contains the identifier of the PCC rule(s) associated to the provided Access Network

Charging Identifier.

sessionChScope:

type: boolean

description: >

When it is included and set to true, indicates the Access Network Charging Identifier

applies to the whole PDU Session

oneOf:

- required: [accNetChaIdValue]

- required: [accNetChargId]

AccNetChargingAddress:

description: Describes the network entity within the access network performing charging

type: object

anyOf:

- required: [anChargIpv4Addr]

- required: [anChargIpv6Addr]

properties:

anChargIpv4Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

anChargIpv6Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

RequestedRuleData:

description: >

Contains rule data requested by the PCF to receive information associated with PCC rule(s).

type: object

properties:

refPccRuleIds:

type: array

items:

type: string

minItems: 1

description: >

An array of PCC rule id references to the PCC rules associated with the control data.

reqData:

type: array

items:

$ref: '#/components/schemas/RequestedRuleDataType'

minItems: 1

description: >

Array of requested rule data type elements indicating what type of rule data is

requested for the corresponding referenced PCC rules.

required:

- refPccRuleIds

- reqData

RequestedUsageData:

description: >

Contains usage data requested by the PCF requesting usage reports for the corresponding

usage monitoring data instances.

type: object

properties:

refUmIds:

type: array

items:

type: string

minItems: 1

description: >

An array of usage monitoring data id references to the usage monitoring data instances

for which the PCF is requesting a usage report. This attribute shall only be provided

when allUmIds is not set to true.

allUmIds:

type: boolean

description: >

This boolean indicates whether requested usage data applies to all usage monitoring data

instances. When it's not included, it means requested usage data shall only apply to the

usage monitoring data instances referenced by the refUmIds attribute.

UeCampingRep:

description: >

Contains the current applicable values corresponding to the policy control request triggers.

type: object

properties:

accessType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AccessType'

ratType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

servNfId:

$ref: '#/components/schemas/ServingNfIdentity'

servingNetwork:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PlmnIdNid'

userLocationInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'

ueTimeZone:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'

netLocAccSupp:

$ref: '#/components/schemas/NetLocAccessSupport'

satBackhaulCategory:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SatelliteBackhaulCategory'

urspEnfInfo:

$ref: '#/components/schemas/UrspEnforcementInfo'

sscMode:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SscMode'

ueReqDnn:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Dnn'

ueReqPduSessionType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PduSessionType'

RuleReport:

description: Reports the status of PCC.

type: object

properties:

pccRuleIds:

type: array

items:

type: string

minItems: 1

description: Contains the identifier of the affected PCC rule(s).

ruleStatus:

$ref: '#/components/schemas/RuleStatus'

contVers:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/ContentVersion'

minItems: 1

description: Indicates the version of a PCC rule.

failureCode:

$ref: '#/components/schemas/FailureCode'

retryAfter:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

finUnitAct:

$ref: 'TS32291\_Nchf\_ConvergedCharging.yaml#/components/schemas/FinalUnitAction'

ranNasRelCauses:

type: array

items:

$ref: '#/components/schemas/RanNasRelCause'

minItems: 1

description: indicates the RAN or NAS release cause code information.

altQosParamId:

type: string

description: >

Indicates the alternative QoS parameter set that the NG-RAN can guarantee. It is

included during the report of successfull resource allocation and indicates that NG-RAN

used an alternative QoS profile because the requested QoS could not be allocated..

required:

- pccRuleIds

- ruleStatus

RanNasRelCause:

description: Contains the RAN/NAS release cause.

type: object

properties:

ngApCause:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/NgApCause'

5gMmCause:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/5GMmCause'

5gSmCause:

$ref: '#/components/schemas/5GSmCause'

epsCause:

$ref: '#/components/schemas/EpsRanNasRelCause'

UeInitiatedResourceRequest:

description: Indicates that a UE requests specific QoS handling for the selected SDF.

type: object

properties:

pccRuleId:

type: string

ruleOp:

$ref: '#/components/schemas/RuleOperation'

precedence:

type: integer

packFiltInfo:

type: array

items:

$ref: '#/components/schemas/PacketFilterInfo'

minItems: 1

reqQos:

$ref: '#/components/schemas/RequestedQos'

required:

- ruleOp

- packFiltInfo

PacketFilterInfo:

description: >

Contains the information from a single packet filter sent from the SMF to the PCF.

type: object

properties:

packFiltId:

type: string

description: An identifier of packet filter.

packFiltCont:

$ref: '#/components/schemas/PacketFilterContent'

tosTrafficClass:

type: string

description: >

Contains the Ipv4 Type-of-Service and mask field or the Ipv6 Traffic-Class field and

mask field.

spi:

type: string

description: The security parameter index of the IPSec packet.

flowLabel:

type: string

description: The Ipv6 flow label header field.

flowDirection:

$ref: '#/components/schemas/FlowDirection'

RequestedQos:

description: Contains the QoS information requested by the UE.

type: object

properties:

5qi:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/5Qi'

gbrUl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate'

gbrDl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate'

required:

- 5qi

QosNotificationControlInfo:

description: Contains the QoS Notification Control Information.

type: object

properties:

refPccRuleIds:

type: array

items:

type: string

minItems: 1

description: >

An array of PCC rule id references to the PCC rules associated with the QoS notification

control info.

notifType:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/QosNotifType'

contVer:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/ContentVersion'

altQosParamId:

type: string

description: >

Indicates the alternative QoS parameter set the NG-RAN can guarantee. When it is omitted

and the notifType attribute is set to NOT\_GUAARANTEED it indicates that the lowest

priority alternative QoS profile could not be fulfilled.

altQosNotSuppInd:

type: boolean

description: >

When present and set to true it indicates that the Alternative QoS profiles are not

supported by NG-RAN.

required:

- refPccRuleIds

- notifType

PartialSuccessReport:

description: >

Includes the information reported by the SMF when some of the PCC rules and/or session rules

and/or policy decision and/or condition data are not successfully installed/activated or

stored.

type: object

properties:

failureCause:

$ref: '#/components/schemas/FailureCause'

ruleReports:

type: array

items:

$ref: '#/components/schemas/RuleReport'

minItems: 1

description: >

Information about the PCC rules provisioned by the PCF not successfully

installed/activated.

sessRuleReports:

type: array

items:

$ref: '#/components/schemas/SessionRuleReport'

minItems: 1

description: >

Information about the session rules provisioned by the PCF not successfully installed.

ueCampingRep:

$ref: '#/components/schemas/UeCampingRep'

policyDecFailureReports:

type: array

items:

$ref: '#/components/schemas/PolicyDecisionFailureCode'

minItems: 1

description: Contains the type(s) of failed policy decision and/or condition data.

invalidPolicyDecs:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/InvalidParam'

minItems: 1

description: >

Indicates the invalid parameters for the reported type(s) of the failed policy decision

and/or condition data.

required:

- failureCause

AuthorizedDefaultQos:

description: Represents the Authorized Default QoS.

type: object

properties:

5qi:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/5Qi'

arp:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Arp'

priorityLevel:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/5QiPriorityLevelRm'

averWindow:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AverWindowRm'

maxDataBurstVol:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/MaxDataBurstVolRm'

maxbrUl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRateRm'

maxbrDl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRateRm'

gbrUl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRateRm'

gbrDl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRateRm'

extMaxDataBurstVol:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ExtMaxDataBurstVolRm'

ErrorReport:

description: Contains the rule,policy decision and/or condition data error reports.

type: object

properties:

error:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ProblemDetails'

ruleReports:

type: array

items:

$ref: '#/components/schemas/RuleReport'

minItems: 1

description: Used to report the PCC rule failure.

sessRuleReports:

type: array

items:

$ref: '#/components/schemas/SessionRuleReport'

minItems: 1

description: Used to report the session rule failure.

polDecFailureReports:

type: array

items:

$ref: '#/components/schemas/PolicyDecisionFailureCode'

minItems: 1

description: Used to report failure of the policy decision and/or condition data.

invalidPolicyDecs:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/InvalidParam'

minItems: 1

description: >

Indicates the invalid parameters for the reported type(s) of the failed policy decision

and/or condition data.

SessionRuleReport:

description: Represents reporting of the status of a session rule.

type: object

properties:

ruleIds:

type: array

items:

type: string

minItems: 1

description: Contains the identifier of the affected session rule(s).

ruleStatus:

$ref: '#/components/schemas/RuleStatus'

sessRuleFailureCode:

$ref: '#/components/schemas/SessionRuleFailureCode'

policyDecFailureReports:

type: array

items:

$ref: '#/components/schemas/PolicyDecisionFailureCode'

minItems: 1

description: Contains the type(s) of failed policy decision and/or condition data.

required:

- ruleIds

- ruleStatus

ServingNfIdentity:

description: Contains the serving Network Function identity.

type: object

properties:

servNfInstId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/NfInstanceId'

guami:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Guami'

anGwAddr:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/AnGwAddress'

sgsnAddr:

$ref: '#/components/schemas/SgsnAddress'

SteeringMode:

description: Contains the steering mode value and parameters determined by the PCF.

type: object

properties:

steerModeValue:

$ref: '#/components/schemas/SteerModeValue'

active:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AccessType'

standby:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AccessTypeRm'

3gLoad:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

prioAcc:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AccessType'

thresValue:

$ref: '#/components/schemas/ThresholdValue'

steerModeInd:

$ref: '#/components/schemas/SteerModeIndicator'

primary:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AccessTypeRm'

required:

- steerModeValue

AdditionalAccessInfo:

description: >

Indicates the combination of additional Access Type and RAT Type for a MA PDU session.

type: object

properties:

accessType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AccessType'

ratType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

required:

- accessType

QosMonitoringData:

description: Contains QoS monitoring related control information.

type: object

properties:

qmId:

type: string

description: Univocally identifies the QoS monitoring policy data within a PDU session.

qosMonParamType:

$ref: '#/components/schemas/QosMonitoringParamType'

reqQosMonParams:

type: array

items:

$ref: '#/components/schemas/RequestedQosMonitoringParameter'

minItems: 1

description: >

Indicates the QoS information to be monitored when the QoS Monitoring is enabled for

the service data flow.

repFreqs:

type: array

items:

$ref: '#/components/schemas/ReportingFrequency'

minItems: 1

description: >

Indicates the frequency for the reporting, such as event triggered and/or periodic.

repThreshDl:

type: integer

description: Indicates the period of time in units of miliiseconds for DL packet delay.

nullable: true

repThreshUl:

type: integer

description: Indicates the period of time in units of miliiseconds for UL packet delay.

nullable: true

repThreshRp:

type: integer

description: >

Indicates the period of time in units of miliiseconds for round trip packet delay.

nullable: true

conThreshDl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UintegerRm'

conThreshUl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UintegerRm'

waitTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSecRm'

repPeriod:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSecRm'

notifyUri:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UriRm'

notifyCorreId:

type: string

nullable: true

directNotifInd:

type: boolean

description: >

Indicates that the direct event notification sent by UPF to the Local NEF or AF is

requested if it is included and set to true.

avrgWndw:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AverWindowRm'

repThreshDatRateUl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRateRm'

repThreshDatRateDl:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRateRm'

dataCollAppId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ApplicationId'

required:

- qmId

- reqQosMonParams

- repFreqs

nullable: true

QosMonitoringReport:

description: Contains reporting information on QoS monitoring.

type: object

properties:

refPccRuleIds:

type: array

items:

type: string

minItems: 1

description: >

An array of PCC rule id references to the PCC rules associated with the QoS monitoring

report.

ulDelays:

type: array

items:

type: integer

minItems: 1

dlDelays:

type: array

items:

type: integer

minItems: 1

rtDelays:

type: array

items:

type: integer

minItems: 1

pdmf:

type: boolean

description: Represents the packet delay measurement failure indicator.

ulDataRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate'

dlDataRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate'

ulCongInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

dlCongInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

required:

- refPccRuleIds

#

TsnBridgeInfo:

description: Contains parameters that describe and identify the TSC user plane node.

type: object

properties:

bridgeId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

dsttAddr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/MacAddr48'

dsttPortNum:

$ref: '#/components/schemas/TsnPortNumber'

dsttResidTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

mtuIpv4:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint16'

mtuIpv6:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

#

PortManagementContainer:

description: Contains the port management information container for a port.

type: object

properties:

portManCont:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Bytes'

portNum:

$ref: '#/components/schemas/TsnPortNumber'

required:

- portManCont

- portNum

BridgeManagementContainer:

description: Contains the UMIC.

type: object

properties:

bridgeManCont:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Bytes'

required:

- bridgeManCont

IpMulticastAddressInfo:

description: Contains the IP multicast addressing information.

type: object

properties:

srcIpv4Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

ipv4MulAddr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

srcIpv6Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

ipv6MulAddr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

DownlinkDataNotificationControl:

description: Contains the downlink data notification control information.

type: object

properties:

notifCtrlInds:

type: array

items:

$ref: '#/components/schemas/NotificationControlIndication'

minItems: 1

typesOfNotif:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DlDataDeliveryStatus'

minItems: 1

DownlinkDataNotificationControlRm:

description: >

This data type is defined in the same way as the DownlinkDataNotificationControl data type,

but with the nullable:true property.

type: object

properties:

notifCtrlInds:

type: array

items:

$ref: '#/components/schemas/NotificationControlIndication'

minItems: 1

nullable: true

typesOfNotif:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DlDataDeliveryStatus'

minItems: 1

nullable: true

nullable: true

ThresholdValue:

description: Indicates the threshold value(s) for RTT and/or Packet Loss Rate.

type: object

properties:

rttThres:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UintegerRm'

plrThres:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketLossRateRm'

nullable: true

NwdafData:

description: >

Indicates the list of Analytic ID(s) per NWDAF instance ID used for the PDU Session consumed

by the SMF.

type: object

properties:

nwdafInstanceId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/NfInstanceId'

nwdafEvents:

type: array

items:

$ref: 'TS29520\_Nnwdaf\_EventsSubscription.yaml#/components/schemas/NwdafEvent'

minItems: 1

required:

- nwdafInstanceId

CallInfo:

description: Identifies the caller and callee information.

type: object

properties:

callingPartyAddrs:

type: array

items:

type: string

minItems: 1

calleeInfo:

$ref: '#/components/schemas/CalleeInfo'

nullable: true

CalleeInfo:

description: Identifies the callee information.

type: object

properties:

calledPartyAddr:

type: string

requestPartyAddrs:

type: array

items:

type: string

minItems: 1

calledAssertIds:

type: array

items:

type: string

minItems: 1

nullable: true

#

TrafficParaData:

description: Contains Traffic Parameter(s) related control information.

type: object

properties:

periodUl:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/DurationMilliSecRm'

periodDl:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/DurationMilliSecRm'

reqTrafficParas:

type: array

items:

$ref: '#/components/schemas/TrafficParameterMeas'

minItems: 1

description: Indicates the traffic parameters to be measured.

repFreqs:

type: array

items:

$ref: '#/components/schemas/ReportingFrequency'

minItems: 1

description: Represents the notification method (periodic or on event detection).

dlN6JitterThr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

repPeriod:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSecRm'

L4sSupportInfo:

description: Contains the ECN marking for L4S support in 5GS information.

type: object

properties:

refPccRuleIds:

type: array

items:

type: string

minItems: 1

description: >

An array of PCC rule id references to the PCC rules associated with the ECN marking

for L4S support info.

notifType:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/L4sNotifType'

required:

- refPccRuleIds

- notifType

SliceUsgCtrlInfo:

description: Represents network slice usage control information.

type: object

properties:

pduSessInactivTimer:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSecRm'

anyOf:

- required: [pduSessInactivTimer]

BatOffsetInfoPcc:

description: >

Indicates the offset of the BAT and the optionally adjusted periodicity.

type: object

required:

- ranBatOffsetNotif

- refPccRuleIds

properties:

ranBatOffsetNotif:

type: integer

description: >

Indicates the BAT offset of the arrival time of the data burst in units

of milliseconds.

adjPeriod:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

refPccRuleIds:

type: array

items:

type: string

minItems: 1

description: >

Identification of the PCC rules associated with the BAT offset and the optionally

adjusted periodicity.

CapabilityReportRule:

description: >

Contains information about whether a capability is supported or

not for one or more PCC rules.

type: object

properties:

refPccRuleIds:

type: array

items:

type: string

minItems: 1

description: >

Contains the identifier of the PCC rule(s) which are affected of QoS Monitoring

Capability Report.

capReport:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/NotifCap'

required:

- refPccRuleIds

- capReport

5GSmCause:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

EpsRanNasRelCause:

type: string

description: Defines the EPS RAN/NAS release cause.

PacketFilterContent:

type: string

description: Defines a packet filter for an IP flow.

FlowDescription:

type: string

description: Defines a packet filter for an IP flow.

TsnPortNumber:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

ApplicationDescriptor:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Bytes'

UePolicyContainer:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Bytes'

UrspEnforcementInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Bytes'

FlowDirection:

anyOf:

- type: string

enum:

- DOWNLINK

- UPLINK

- BIDIRECTIONAL

- UNSPECIFIED

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates the direction of the service data flow.

Possible values are:

- DOWNLINK: The corresponding filter applies for traffic to the UE.

- UPLINK: The corresponding filter applies for traffic from the UE.

- BIDIRECTIONAL: The corresponding filter applies for traffic both to and from the UE.

- UNSPECIFIED: The corresponding filter applies for traffic to the UE (downlink), but has no

specific direction declared. The service data flow detection shall apply the filter for

uplink traffic as if the filter was bidirectional. The PCF shall not use the value

UNSPECIFIED in filters created by the network in NW-initiated procedures. The PCF shall only

include the value UNSPECIFIED in filters in UE-initiated procedures if the same value is

received from the SMF.

FlowDirectionRm:

description: >

This data type is defined in the same way as the "FlowDirection" data type, with the only

difference that it allows null value.

anyOf:

- $ref: '#/components/schemas/FlowDirection'

- $ref: 'TS29571\_CommonData.yaml#/components/schemas/NullValue'

ReportingLevel:

anyOf:

- type: string

enum:

- SER\_ID\_LEVEL

- RAT\_GR\_LEVEL

- SPON\_CON\_LEVEL

- $ref: 'TS29571\_CommonData.yaml#/components/schemas/NullValue'

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates the reporting level.

Possible values are:

- SER\_ID\_LEVEL: Indicates that the usage shall be reported on service id and rating group

combination level.

- RAT\_GR\_LEVEL: Indicates that the usage shall be reported on rating group level.

- SPON\_CON\_LEVEL: Indicates that the usage shall be reported on sponsor identity and rating

group combination level.

MeteringMethod:

anyOf:

- type: string

enum:

- DURATION

- VOLUME

- DURATION\_VOLUME

- EVENT

- $ref: 'TS29571\_CommonData.yaml#/components/schemas/NullValue'

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates the metering method.

Possible values are:

- DURATION: Indicates that the duration of the service data flow traffic shall be metered.

- VOLUME: Indicates that volume of the service data flow traffic shall be metered.

- DURATION\_VOLUME: Indicates that the duration and the volume of the service data flow

traffic shall be metered.

- EVENT: Indicates that events of the service data flow traffic shall be metered.

PolicyControlRequestTrigger:

anyOf:

- type: string

enum:

- PLMN\_CH

- RES\_MO\_RE

- AC\_TY\_CH

- UE\_IP\_CH

- UE\_MAC\_CH

- AN\_CH\_COR

- US\_RE

- APP\_STA

- APP\_STO

- AN\_INFO

- CM\_SES\_FAIL

- PS\_DA\_OFF

- DEF\_QOS\_CH

- SE\_AMBR\_CH

- QOS\_NOTIF

- NO\_CREDIT

- REALLO\_OF\_CREDIT

- PRA\_CH

- SAREA\_CH

- SCNN\_CH

- RE\_TIMEOUT

- RES\_RELEASE

- SUCC\_RES\_ALLO

- RAI\_CH

- RAT\_TY\_CH

- REF\_QOS\_IND\_CH

- NUM\_OF\_PACKET\_FILTER

- UE\_STATUS\_RESUME

- UE\_TZ\_CH

- AUTH\_PROF\_CH

- QOS\_MONITORING

- QOS\_MON\_CAP\_REPO

- SCELL\_CH

- USER\_LOCATION\_CH

- EPS\_FALLBACK

- MA\_PDU

- TSN\_BRIDGE\_INFO

- 5G\_RG\_JOIN

- 5G\_RG\_LEAVE

- DDN\_FAILURE

- DDN\_DELIVERY\_STATUS

- GROUP\_ID\_LIST\_CHG

- DDN\_FAILURE\_CANCELLATION

- DDN\_DELIVERY\_STATUS\_CANCELLATION

- VPLMN\_QOS\_CH

- SUCC\_QOS\_UPDATE

- SAT\_CATEGORY\_CHG

- PCF\_UE\_NOTIF\_IND

- NWDAF\_DATA\_CHG

- UE\_POL\_CONT\_IND

- URSP\_ENFORCEMENT\_INFO

- HR\_SBO\_IND\_CHG

- L4S\_SUPP

- NET\_SLICE\_REPL

- BAT\_OFFSET\_INFO

- UE\_REACH\_STATUS\_CH

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates the policy control request trigger(s).

Possible values are:

- PLMN\_CH: PLMN Change

- RES\_MO\_RE: A request for resource modification has been received by the SMF. The SMF

always reports to the PCF.

- AC\_TY\_CH: Access Type Change.

- UE\_IP\_CH: UE IP address change. The SMF always reports to the PCF.

- UE\_MAC\_CH: A new UE MAC address is detected or a used UE MAC address is inactive for a

specific period.

- AN\_CH\_COR: Access Network Charging Correlation Information

- US\_RE: The PDU Session or the Monitoring key specific resources consumed by a UE either

reached the threshold or needs to be reported for other reasons.

- APP\_STA: The start of application traffic has been detected.

- APP\_STO: The stop of application traffic has been detected.

- AN\_INFO: Access Network Information report.

- CM\_SES\_FAIL: Credit management session failure.

- PS\_DA\_OFF: The SMF reports when the 3GPP PS Data Off status changes. The SMF always

reports to the PCF.

- DEF\_QOS\_CH: Default QoS Change. The SMF always reports to the PCF.

- SE\_AMBR\_CH: Session-AMBR Change. The SMF always reports to the PCF.

- QOS\_NOTIF: The SMF notify the PCF when receiving notification from RAN that QoS targets of

the QoS Flow cannot be guranteed or gurateed again.

- NO\_CREDIT: Out of credit.

- REALLO\_OF\_CREDIT: Reallocation of credit.

- PRA\_CH: Change of UE presence in Presence Reporting Area.

- SAREA\_CH: Location Change with respect to the Serving Area.

- SCNN\_CH: Location Change with respect to the Serving CN node.

- RE\_TIMEOUT: Indicates the SMF generated the request because there has been a PCC

revalidation timeout.

- RES\_RELEASE: Indicate that the SMF can inform the PCF of the outcome of the release of

resources for those rules that require so.

- SUCC\_RES\_ALLO: Indicates that the requested rule data is the successful resource

allocation.

- RAI\_CH: Location Change with respect to the RAI of GERAN and UTRAN.

- RAT\_TY\_CH: RAT Type Change.

- REF\_QOS\_IND\_CH: Reflective QoS indication Change

- NUM\_OF\_PACKET\_FILTER: Indicates that the SMF shall report the number of supported packet

filter for signalled QoS rules.

- UE\_STATUS\_RESUME: Indicates that the UE's status is resumed.

- UE\_TZ\_CH: UE Time Zone Change.

- AUTH\_PROF\_CH: The DN-AAA authorization profile index has changed.

- QOS\_MONITORING: Indicate that the SMF notifies the PCF of the QoS Monitoring information.

- QOS\_MON\_CAP\_REPO: Indicates that the NF service consumer notifies the PCF about the

support of QoS Monitoring Capability Report.

- SCELL\_CH: Location Change with respect to the Serving Cell.

- USER\_LOCATION\_CH: Indicate that user location has been changed, applicable to serving area

change and serving cell change.

- EPS\_FALLBACK: EPS Fallback report is enabled in the SMF.

- MA\_PDU: UE Indicates that the SMF notifies the PCF of the MA PDU session request.

- TSN\_BRIDGE\_INFO: TSC user plane node information available.

- 5G\_RG\_JOIN: The 5G-RG has joined to an IP Multicast Group.

- 5G\_RG\_LEAVE: The 5G-RG has left an IP Multicast Group.

- DDN\_FAILURE: Event subscription for DDN Failure event received.

- DDN\_DELIVERY\_STATUS: Event subscription for DDN Delivery Status received.

- GROUP\_ID\_LIST\_CHG: UE Internal Group Identifier(s) has changed: the SMF reports that UDM

provided list of group Ids has changed.

- DDN\_FAILURE\_CANCELLATION: The event subscription for DDN Failure event is cancelled.

- DDN\_DELIVERY\_STATUS\_CANCELLATION: The event subscription for DDD STATUS is cancelled.

- VPLMN\_QOS\_CH: Change of the QoS supported in the VPLMN.

- SUCC\_QOS\_UPDATE: Indicates that the requested MPS Action is successful.

- SAT\_CATEGORY\_CHG: Indicates that the SMF has detected a change between different satellite

backhaul categories, or between a satellite backhaul and a non-satellite backhaul.

- PCF\_UE\_NOTIF\_IND: Indicates the SMF has detected the AMF forwarded the PCF for the UE

indication to receive/stop receiving notifications of SM Policy association

established/terminated events.

- NWDAF\_DATA\_CHG: Indicates that the NWDAF instance IDs used for the PDU session and/or

associated Analytics IDs used for the PDU session and available in the SMF have changed.

- UE\_POL\_CONT\_IND: Indicates that a UE policy container or failure delivery report is

received from the UE in EPC over a PDN connection.

- URSP\_ENFORCEMENT\_INFO: Indicates a report of URSP rule enforcement information.

- HR\_SBO\_IND\_CHG: Indicates the HR-SBO support indication has changed.

- L4S\_SUPP: Indicates whether ECN marking for L4S is not available or available again

in 5GS.

- NET\_SLICE\_REPL: Indicates network slice replacement, i.e., a change between the initial

S-NSSAI of the PDU Session and the Alternative S-NSSAI

- BAT\_OFFSET\_INFO: Indicates that the SMF has detected the BAT offset and optionally

adjusted periodicity.

- UE\_REACH\_STATUS\_CH: Indicates that there is a change in the UE reachability status.

RequestedRuleDataType:

anyOf:

- type: string

enum:

- CH\_ID

- MS\_TIME\_ZONE

- USER\_LOC\_INFO

- RES\_RELEASE

- SUCC\_RES\_ALLO

- EPS\_FALLBACK

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates the type of rule data requested by the PCF.

Possible values are:

- CH\_ID: Indicates that the requested rule data is the charging identifier.

- MS\_TIME\_ZONE: Indicates that the requested access network info type is the UE's timezone.

- USER\_LOC\_INFO: Indicates that the requested access network info type is the UE's location.

- RES\_RELEASE: Indicates that the requested rule data is the result of the release of

resource.

- SUCC\_RES\_ALLO: Indicates that the requested rule data is the successful resource

allocation.

- EPS\_FALLBACK: Indicates that the requested rule data is the report of QoS flow rejection

due to EPS fallback.

RuleStatus:

anyOf:

- type: string

enum:

- ACTIVE

- INACTIVE

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates the status of PCC or session rule.

Possible values are

- ACTIVE: Indicates that the PCC rule(s) are successfully installed (for those provisioned

from PCF) or activated (for those pre-defined in SMF), or the session rule(s) are

successfully installed

- INACTIVE: Indicates that the PCC rule(s) are removed (for those provisioned from PCF) or

inactive (for those pre-defined in SMF) or the session rule(s) are removed.

FailureCode:

anyOf:

- type: string

enum:

- UNK\_RULE\_ID

- RA\_GR\_ERR

- SER\_ID\_ERR

- NF\_MAL

- RES\_LIM

- MAX\_NR\_QoS\_FLOW

- MISS\_FLOW\_INFO

- RES\_ALLO\_FAIL

- UNSUCC\_QOS\_VAL

- INCOR\_FLOW\_INFO

- PS\_TO\_CS\_HAN

- APP\_ID\_ERR

- NO\_QOS\_FLOW\_BOUND

- FILTER\_RES

- MISS\_REDI\_SER\_ADDR

- CM\_END\_USER\_SER\_DENIED

- CM\_CREDIT\_CON\_NOT\_APP

- CM\_AUTH\_REJ

- CM\_USER\_UNK

- CM\_RAT\_FAILED

- UE\_STA\_SUSP

- UNKNOWN\_REF\_ID

- INCORRECT\_COND\_DATA

- REF\_ID\_COLLISION

- TRAFFIC\_STEERING\_ERROR

- DNAI\_STEERING\_ERROR

- AN\_GW\_FAILE

- MAX\_NR\_PACKET\_FILTERS\_EXCEEDED

- PACKET\_FILTER\_TFT\_ALLOCATION\_EXCEEDED

- MUTE\_CHG\_NOT\_ALLOWED

- UE\_TEMPORARILY\_UNAVAILABLE

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates the reason of the PCC rule failure.

Possible values are

- UNK\_RULE\_ID: Indicates that the pre-provisioned PCC rule could not be successfully

activated because the PCC rule identifier is unknown to the SMF.

- RA\_GR\_ERR: Indicate that the PCC rule could not be successfully installed or enforced

because the Rating Group specified within the Charging Data policy decision which the PCC

rule refers to is unknown or, invalid.

- SER\_ID\_ERR: Indicate that the PCC rule could not be successfully installed or enforced

because the Service Identifier specified within the Charging Data policy decision which the

PCC rule refers to is invalid, unknown, or not applicable to the service being charged.

- NF\_MAL: Indicate that the PCC rule could not be successfully installed (for those

provisioned from the PCF) or activated (for those pre-defined in SMF) or enforced (for those

already successfully installed) due to SMF/UPF malfunction.

- RES\_LIM: Indicate that the PCC rule could not be successfully installed (for those

provisioned from PCF) or activated (for those pre-defined in SMF) or enforced (for those

already successfully installed) due to a limitation of resources at the SMF/UPF.

- MAX\_NR\_QoS\_FLOW: Indicate that the PCC rule could not be successfully installed (for those

provisioned from PCF) or activated (for those pre-defined in SMF) or enforced (for those

already successfully installed) due to the fact that the maximum number of QoS flows has

been reached for the PDU session.

- MISS\_FLOW\_INFO: Indicate that the PCC rule could not be successfully installed or enforced

because neither the "flowInfos" attribute nor the "appId" attribute is specified within the

PccRule data structure by the PCF during the first install request of the PCC rule.

- RES\_ALLO\_FAIL: Indicate that the PCC rule could not be successfully installed or

maintained since the QoS flow establishment/modification failed, or the QoS flow was

released.

- UNSUCC\_QOS\_VAL: indicate that the QoS validation has failed or when Guaranteed Bandwidth >

Max-Requested-Bandwidth.

- INCOR\_FLOW\_INFO: Indicate that the PCC rule could not be successfully installed or

modified at the SMF because the provided flow information is not supported by the network

(e.g. the provided IP address(es) or Ipv6 prefix(es) do not correspond to an IP version

applicable for the PDU session).

- PS\_TO\_CS\_HAN: Indicate that the PCC rule could not be maintained because of PS to CS

handover.

- APP\_ID\_ERR: Indicate that the rule could not be successfully installed or enforced because

the Application Identifier is invalid, unknown, or not applicable to the application

required for detection.

- NO\_QOS\_FLOW\_BOUND: Indicate that there is no QoS flow which the SMF can bind the PCC

rule(s) to.

- FILTER\_RES: Indicate that the Flow Information within the "flowInfos" attribute cannot be

handled by the SMF because any of the restrictions defined in clause 5.4.2 of 3GPP TS 29.212

was not met.

- MISS\_REDI\_SER\_ADDR: Indicate that the PCC rule could not be successfully installed or

enforced at the SMF because there is no valid Redirect Server Address within the Traffic

Control Data policy decision which the PCC rule refers to provided by the PCF and no

preconfigured redirection address for this PCC rule at the SMF.

- CM\_END\_USER\_SER\_DENIED: Indicate that the charging system denied the service request due

to service restrictions (e.g. terminate rating group) or limitations related to the

end-user, for example the end-user's account could not cover the requested service.

- CM\_CREDIT\_CON\_NOT\_APP: Indicate that the charging system determined that the service can

be granted to the end user but no further credit control is needed for the service (e.g.

service is free of charge or is treated for offline charging).

- CM\_AUTH\_REJ: Indicate that the charging system denied the service request in order to

terminate the service for which credit is requested.

- CM\_USER\_UNK: Indicate that the specified end user could not be found in the charging

system.

- CM\_RAT\_FAILED: Indicate that the charging system cannot rate the service request due to

insufficient rating input, incorrect AVP combination or due to an attribute or an attribute

value that is not recognized or supported in the rating.

- UE\_STA\_SUSP: Indicates that the UE is in suspend state.

- UNKNOWN\_REF\_ID: Indicates that the PCC rule could not be successfully installed/modified

because the referenced identifier to a Policy Decision Data or to a Condition Data is

unknown to the SMF.

- INCORRECT\_COND\_DATA: Indicates that the PCC rule could not be successfully

installed/modified because the referenced Condition data are incorrect.

- REF\_ID\_COLLISION: Indicates that PCC rule could not be successfully installed/modified

because the same Policy Decision is referenced by a session rule (e.g. the session rule

and the PCC rule refer to the same Usage Monitoring decision data).

- TRAFFIC\_STEERING\_ERROR: Indicates that enforcement of the steering of traffic to the

N6-LAN or 5G-LAN failed; or the dynamic PCC rule could not be successfully installed or

modified at the NF service consumer because there are invalid traffic steering policy

identifier(s) within the provided Traffic Control Data policy decision to which the PCC

rule refers.

- DNAI\_STEERING\_ERROR: Indicates that the enforcement of the steering of traffic to the

indicated DNAI failed; or the dynamic PCC rule could not be successfully installed or

modified at the NF service consumer because there is invalid route information for a DNAI(s)

(e.g. routing profile id is not configured) within the provided Traffic Control Data policy

decision to which the PCC rule refers.

- AN\_GW\_FAILED: This value is used to indicate that the AN-Gateway has failed and that the

PCF should refrain from sending policy decisions to the SMF until it is informed that the

S-GW has been recovered. This value shall not be used if the SM Policy association

modification procedure is initiated for PCC rule removal only.

- MAX\_NR\_PACKET\_FILTERS\_EXCEEDED: This value is used to indicate that the PCC rule could not

be successfully installed, modified or enforced at the NF service consumer because the

number of supported packet filters for signalled QoS rules for the PDU session has been

reached.

- PACKET\_FILTER\_TFT\_ALLOCATION\_EXCEEDED: This value is used to indicate that the PCC rule is

removed at 5GS to EPS mobility because TFT allocation was not possible since the number of

active packet filters in the EPC bearer is exceeded.

- MUTE\_CHG\_NOT\_ALLOWED: Indicates that the PCC rule could not be successfully modified

because the mute condition for application detection report cannot be changed. Applicable

when the functionality introduced with the ADC feature applies.

- UE\_TEMPORARILY\_UNAVAILABLE: Indicates that the PCC rule could not be successfully

installed or modified because the SMF was informed that the UE was not reachable.

AfSigProtocol:

anyOf:

- type: string

enum:

- NO\_INFORMATION

- SIP

- $ref: 'TS29571\_CommonData.yaml#/components/schemas/NullValue'

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates the protocol used for signalling between the UE and the AF.

Possible values are

- NO\_INFORMATION: Indicate that no information about the AF signalling protocol is being

provided.

- SIP: Indicate that the signalling protocol is Session Initiation Protocol.

RuleOperation:

anyOf:

- type: string

enum:

- CREATE\_PCC\_RULE

- DELETE\_PCC\_RULE

- MODIFY\_PCC\_RULE\_AND\_ADD\_PACKET\_FILTERS

- MODIFY\_ PCC\_RULE\_AND\_REPLACE\_PACKET\_FILTERS

- MODIFY\_ PCC\_RULE\_AND\_DELETE\_PACKET\_FILTERS

- MODIFY\_PCC\_RULE\_WITHOUT\_MODIFY\_PACKET\_FILTERS

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Indicates a UE initiated resource operation that causes a request for PCC rules.

Possible values are

- CREATE\_PCC\_RULE: Indicates to create a new PCC rule to reserve the resource requested by

the UE.

- DELETE\_PCC\_RULE: Indicates to delete a PCC rule corresponding to reserve the resource

requested by the UE.

- MODIFY\_PCC\_RULE\_AND\_ADD\_PACKET\_FILTERS: Indicates to modify the PCC rule by adding new

packet filter(s).

- MODIFY\_ PCC\_RULE\_AND\_REPLACE\_PACKET\_FILTERS: Indicates to modify the PCC rule by replacing

the existing packet filter(s).

- MODIFY\_ PCC\_RULE\_AND\_DELETE\_PACKET\_FILTERS: Indicates to modify the PCC rule by deleting

the existing packet filter(s).

- MODIFY\_PCC\_RULE\_WITHOUT\_MODIFY\_PACKET\_FILTERS: Indicates to modify the PCC rule by

modifying the QoS of the PCC rule.

RedirectAddressType:

anyOf:

- type: string

enum:

- IPV4\_ADDR

- IPV6\_ADDR

- URL

- SIP\_URI

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates the redirect address type.

Possible values are

- IPV4\_ADDR: Indicates that the address type is in the form of "dotted-decimal" IPv4

address.

- IPV6\_ADDR: Indicates that the address type is in the form of IPv6 address.

- URL: Indicates that the address type is in the form of Uniform Resource Locator.

- SIP\_URI: Indicates that the address type is in the form of SIP Uniform Resource

Identifier.

QosFlowUsage:

anyOf:

- type: string

enum:

- GENERAL

- IMS\_SIG

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates a QoS flow usage information.

Possible values are

- GENERAL: Indicate no specific QoS flow usage information is available.

- IMS\_SIG: Indicate that the QoS flow is used for IMS signalling only.

FailureCause:

description: Indicates the cause of the failure in a Partial Success Report.

anyOf:

- type: string

enum:

- PCC\_RULE\_EVENT

- PCC\_QOS\_FLOW\_EVENT

- RULE\_PERMANENT\_ERROR

- RULE\_TEMPORARY\_ERROR

- POL\_DEC\_ERROR

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

CreditManagementStatus:

description: Indicates the reason of the credit management session failure.

anyOf:

- type: string

enum:

- END\_USER\_SER\_DENIED

- CREDIT\_CTRL\_NOT\_APP

- AUTH\_REJECTED

- USER\_UNKNOWN

- RATING\_FAILED

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

SessionRuleFailureCode:

anyOf:

- type: string

enum:

- NF\_MAL

- RES\_LIM

- SESSION\_RESOURCE\_ALLOCATION\_FAILURE

- UNSUCC\_QOS\_VAL

- INCORRECT\_UM

- UE\_STA\_SUSP

- UNKNOWN\_REF\_ID

- INCORRECT\_COND\_DATA

- REF\_ID\_COLLISION

- AN\_GW\_FAILED

- DEFAULT\_QOS\_MODIFICATION\_FAILURE

- SESSION\_AMBR\_MODIFICATION\_FAILURE

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates the reason of the session rule failure.

Possible values are

- NF\_MAL: Indicates that the PCC rule could not be successfully installed (for those

provisioned from the PCF) or activated (for those pre-defined in SMF) or enforced (for those

already successfully installed) due to SMF/UPF malfunction.

- RES\_LIM: Indicates that the PCC rule could not be successfully installed (for those

provisioned from PCF) or activated (for those pre-defined in SMF) or enforced (for those

already successfully installed) due to a limitation of resources at the SMF/UPF.

- SESSION\_RESOURCE\_ALLOCATION\_FAILURE: Indicates the session rule could not be successfully

enforced due to failure during the allocation of resources for the PDU session in the UE,

RAN or AMF.

- UNSUCC\_QOS\_VAL: indicates that the QoS validation has failed.

- INCORRECT\_UM: The usage monitoring data of the enforced session rule is not the same for

all the provisioned session rule(s).

- UE\_STA\_SUSP: Indicates that the UE is in suspend state.

- UNKNOWN\_REF\_ID: Indicates that the session rule could not be successfully

installed/modified because the referenced identifier to a Policy Decision Data or to a

Condition Data is unknown to the SMF.

- INCORRECT\_COND\_DATA: Indicates that the session rule could not be successfully

installed/modified because the referenced Condition data are incorrect.

- REF\_ID\_COLLISION: Indicates that the session rule could not be successfully

installed/modified because the same Policy Decision is referenced by a PCC rule (e.g. the

session rule and the PCC rule refer to the same Usage Monitoring decision data).

- AN\_GW\_FAILED: Indicates that the AN-Gateway has failed and that the PCF should refrain

from sending policy decisions to the SMF until it is informed that the S-GW has been

recovered. This value shall not be used if the SM Policy association modification procedure

is initiated for session rule removal only.

- DEFAULT\_QOS\_MODIFICATION\_FAILURE: Indicates that the enforcement of the default QoS

modification failed. The SMF shall use this value to indicate to the PCF that the default

QoS modification has failed.

- SESSION\_AMBR\_MODIFICATION\_FAILURE: Indicates that the enforcement of the session-AMBR

modification failed. The SMF shall use this value to indicate to the PCF that the

session-AMBR modification has failed.

SteeringFunctionality:

anyOf:

- type: string

enum:

- MPTCP

- MPQUIC

- ATSSS\_LL

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates functionality to support traffic steering, switching and splitting determined

by the PCF.

Possible values are

- MPTCP: Indicates that PCF authorizes the MPTCP functionality to support traffic

steering, switching and splitting.

- MPQUIC: Indicates that PCF authorizes the MPQUIC functionality to support traffic

steering, switching and splitting.

- ATSSS\_LL: Indicates that PCF authorizes the ATSSS-LL functionality to support traffic

steering, switching and splitting.

SteerModeValue:

description: Indicates the steering mode value determined by the PCF.

anyOf:

- type: string

enum:

- ACTIVE\_STANDBY

- LOAD\_BALANCING

- SMALLEST\_DELAY

- PRIORITY\_BASED

- REDUNDANT

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

MulticastAccessControl:

description: >

Indicates whether the service data flow, corresponding to the service data flow template, is

allowed or not allowed.

anyOf:

- type: string

enum:

- ALLOWED

- NOT\_ALLOWED

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

RequestedQosMonitoringParameter:

description: Indicates the requested QoS monitoring parameters to be measured.

anyOf:

- type: string

enum:

- DOWNLINK

- UPLINK

- ROUND\_TRIP

- DOWNLINK\_DATA\_RATE

- UPLINK\_DATA\_RATE

- DOWNLINK\_CONGESTION

- UPLINK\_CONGESTION

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

ReportingFrequency:

description: Indicates the frequency for the reporting.

anyOf:

- type: string

enum:

- EVENT\_TRIGGERED

- PERIODIC

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

SgsnAddress:

description: describes the address of the SGSN

type: object

anyOf:

- required: [sgsnIpv4Addr]

- required: [sgsnIpv6Addr]

properties:

sgsnIpv4Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

sgsnIpv6Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

SmPolicyAssociationReleaseCause:

description: >

Represents the cause due to which the PCF requests the termination of the SM policy

association.

anyOf:

- type: string

enum:

- UNSPECIFIED

- UE\_SUBSCRIPTION

- INSUFFICIENT\_RES

- VALIDATION\_CONDITION\_NOT\_MET

- REACTIVATION\_REQUESTED

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

PduSessionRelCause:

description: Contains the SMF PDU Session release cause.

anyOf:

- type: string

enum:

- PS\_TO\_CS\_HO

- RULE\_ERROR

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

MaPduIndication:

description: >

Contains the MA PDU session indication, i.e., MA PDU Request or MA PDU Network-Upgrade

Allowed.

anyOf:

- type: string

enum:

- MA\_PDU\_REQUEST

- MA\_PDU\_NETWORK\_UPGRADE\_ALLOWED

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

AtsssCapability:

description: Contains the ATSSS capability supported for the MA PDU Session.

anyOf:

- type: string

enum:

- MPTCP\_ATSSS\_LL\_WITH\_ASMODE\_UL

- MPTCP\_ATSSS\_LL\_WITH\_EXSDMODE\_DL\_ASMODE\_UL

- MPTCP\_ATSSS\_LL\_WITH\_ASMODE\_DLUL

- ATSSS\_LL

- MPTCP\_ATSSS\_LL

- MPQUIC\_ATSSS\_LL\_WITH\_ASMODE\_UL

- MPQUIC\_ATSSS\_LL\_WITH\_EXSDMODE\_DL\_ASMODE\_UL

- MPQUIC\_ATSSS\_LL\_WITH\_ASMODE\_DLUL

- MPQUIC\_ATSSS\_LL

- MPTCP\_MPQUIC\_ATSSS\_LL\_WITH\_ASMODE\_UL

- MPTCP\_MPQUIC\_ATSSS\_LL\_WITH\_EXSDMODE\_DL\_ASMODE\_UL

- MPTCP\_MPQUIC\_ATSSS\_LL\_WITH\_ASMODE\_DLUL

- MPTCP\_MPQUIC\_ATSSS\_LL

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

#

NetLocAccessSupport:

anyOf:

- type: string

enum:

- ANR\_NOT\_SUPPORTED

- TZR\_NOT\_SUPPORTED

- LOC\_NOT\_SUPPORTED

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates the access network support of the report of the requested access network

information.

Possible values are

- ANR\_NOT\_SUPPORTED: Indicates that the access network does not support the report of access

network information.

- TZR\_NOT\_SUPPORTED: Indicates that the access network does not support the report of UE

time zone.

- LOC\_NOT\_SUPPORTED: Indicates that the access network does not support the report of UE

Location (or PLMN Id).

PolicyDecisionFailureCode:

description: Indicates the type of the failed policy decision and/or condition data.

anyOf:

- type: string

enum:

- TRA\_CTRL\_DECS\_ERR

- QOS\_DECS\_ERR

- CHG\_DECS\_ERR

- USA\_MON\_DECS\_ERR

- QOS\_MON\_DECS\_ERR

- CON\_DATA\_ERR

- POLICY\_PARAM\_ERR

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

#

NotificationControlIndication:

description: >

Indicates that the notification of DDD Status is requested and/or that the notification of

DDN Failure is requested.

anyOf:

- type: string

enum:

- DDN\_FAILURE

- DDD\_STATUS

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

#

SteerModeIndicator:

description: Contains Autonomous load-balance indicator or UE-assistance indicator.

anyOf:

- type: string

enum:

- AUTO\_LOAD\_BALANCE

- UE\_ASSISTANCE

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

#

TrafficParameterMeas:

description: Indicates the traffic parameters to be measured.

anyOf:

- type: string

enum:

- DL\_N6\_JITTER

- DL\_PERIOD

- UL\_PERIOD

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

QosMonitoringParamType:

anyOf:

- type: string

enum:

- PACKET\_DELAY

- CONGESTION

- DATA\_RATE

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Indicates the QoS monitoring parameter type.

Possible values are:

- PACKET\_DELAY: Indicates that the QoS monitoring parameter to be measured is packet delay.

- CONGESTION: Indicates that the QoS monitoring parameter to be measured is congestion.

- DATA\_RATE: Indicates that the QoS monitoring parameter to be measured is data rate.

TransportMode:

description: >

Indicates the Transport Mode when the steering functionality is MPQUIC functionality.

anyOf:

- type: string

enum:

- DATAGRAM\_MODE\_1

- DATAGRAM\_MODE\_2

- STREAM\_MODE

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

UeReachabilityStatus:

anyOf:

- type: string

enum:

- REACHABLE

- UNREACHABLE

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Indicates the UE rechability status.

Possible values are:

- REACHABLE: Indicates that the UE is reachable.

- UNREACHABLE: Indicates that the UE is unreachable.

#

\*\*\* End of Changes \*\*\*